Acceptance Toward the use of Micronutrients as an Alternative Treatment for Mood Disorders

A thesis submitted in partial fulfilment of the requirements for the Degree of Master of Science in Psychology

by

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Abbreviations

ADHD	Attention Deficit Hyperactivity Disorder
CAM	Complementary and Alternative Medicine
CBCL	Child Behaviour Checklist
CBT	Cognitive Behavioural Therapy
DSM-IV-TR	Diagnostic and Statistical Manual IV-TR
GP	General Practitioner
RBD	Recurrent Brief Depression
SF-36	Medical Outcomes 36-Item Short Form Community Health Survey
SSRI	Selective Serotonin Reuptake Inhibitor
UCHEC	University of Canterbury Human Ethics Commitee
YOQ	Youth Outcome Questionnaire
YMRS	Young Mania Rating Scale

Definitions

'Acceptance' Score	Calculated overall scores out of 100 from 'acceptance' sections of the survey used in this research to determine each participant's 'acceptance' toward the use of micronutrients as an alternative treatment for mood disorders.
Acceptance 'towards the use of micronutrient treatment in people under the age of 18' score	Calculated averages out of five from the final section of the survey used in this research to determine each participant's 'acceptance' toward the use of micronutrients as an alternative treatment for mood disorders in people under the age of 18.
Alternative Treatment	Any treatment that is not a form of psychotherapy, counselling, professional talking therapy or any prescribed antidepressant or anti-psychotic medication.
Cognitive Behavioural Therapy	A psychotherapeutic approach addressing dysfunctional emotions, behaviours, and cognitions through a goal-oriented, systematic process.
Conventional Treatment	Any treatment for a mood disorder that is a form of psychotherapy, counselling, any kind of professional talking therapy and/or any prescribed medication such as anti depressants or anti

	psychotics.
Dietary Supplement (also known as a food supplement)	Preparation intended to supply nutrients, (such as vitamins, minerals, fatty acids or amino acids) that are missing or not consumed in sufficient quantity in a person's diet.
EMPowerplus	A micronutrient treatment consisting of 16 minerals, 14 vitamins, 3 amino acids, and 3 antioxidants.
Healthcare and/or medical practitioner	Including but not limited to psychiatrists, family doctors or General Practitioners, other medical doctors, psychologists, nurses, social workers, counsellors or psychotherapists.
'Healthy Lifestyle' Score	Calculated overall scores out of 80 from health sections of the survey used in this research to determine each participant's level of importance indicated to leading a healthy life.
Micronutrients	Dietary multivitamins, minerals and amino acids.
Mood Disorder	A depressive disorder (including atypical depression, melancholic depression, psychotic major depression, catatonic depression, postpartum depression, seasonal affective disorder, dysthymia and/or depressive disorder not otherwise

	specified) or bipolar disorder (including bipolar I, bipolar II, cyclothymia and/or bipolar disorder not otherwise specified).
Multivitamins	A dietary supplement containing all or most of the vitamins that may not be readily available in the diet.

Abstract

The World Health Organisation predicts that by 2020 depression will be the second highest cause of death and disability in the world (World Health Organisation, 2010). Selective serotonin reuptake inhibitors (SSRIs) have been found to be the most suitable antidepressant for first-line treatment of a mood disorder (National Institute for Health and Clinical Excellence, 2004), but less than half of all individuals achieve complete remission after therapy with a single antidepressant. Others display partial or intolerant responses to treatment (Nemeroff & Owens, 2002). This emphasises a need to develop alternative treatment options. There is evidence that micronutrients have fewer side effects than antidepressants (Dalmiya, Darnton-Hill, Schyltink & Shrimpton, 2009). Kaplan, Crawford, Field and Simpson (2007) suggest that errors in metabolism may result in unstable mood, leading to possible mood disorders. Mutation of metabolism is correctable by giving the malnourished individual additional vitamins thereby correcting metabolism and creating a more stable mood. An online survey completed by 661 participants (141 males, 520 females) assessed acceptance levels towards the use of micronutrients as an alternative treatment for mood disorders. As predicted, healthcare and medical professionals scored lower in acceptance ($t(659)=3.12$, $p=0.002$) and people who lead healthy lifestyles scored higher in acceptance ($r=0.105$, $n=658$, $p<0.05$). There were no significant effects of gender ($t(659)=1.74$, $p=0.082$), experience with mood disorders ($F(3, 657)=0.86$, $p=0.46$) or low household incomes ($r=-0.066$, $n=661$, $p<0.05$). Treatment users and providers alike seek more knowledge about the effectiveness of micronutrients and acceptance of micronutrients is largely granted on the basis of a combination treatment with conventional methods. The study is limited by an overrepresentation of females in the sample.

Introduction

Conceptualisation of Mood Disorders

'Mood disorder' is an expression for a group of diagnoses as classified by the Diagnostic and Statistical Manual IV-TR (DSM-IV-TR) (American Psychiatric Association, 2000). Pioneering British psychiatrist Henry Maudsley (1835-1918) proposed the all-encompassing category for these diagnoses as 'affective disorders'. This was later replaced by 'mood disorders', with 'affective disorders' referring to a persons' external observable expressions and 'mood disorders' referring to ones underlying emotional state (Bynum, Porter & Shepard, 1988). The category of 'mood disorders' comprises bipolar disorders and depressive disorders. Bipolar disorders are divided into four separate disorders, while depressive disorders are divided into ten (American Psychiatric Association, 2000). The depressive disorders encompass atypical depression, melancholic depression, psychotic major depression, catatonic depression, postpartum depression, seasonal affective disorder, dysthymia, depressive disorder not otherwise specified, recurrent brief depression and minor depressive disorder. The bipolar disorders encompass bipolar I, bipolar II, cyclothymia and bipolar disorder not otherwise specified (American Psychiatric Association, 2000).

Subtypes of Depressive Disorders and Comorbidity

Ten subtypes of depressive disorders are characterised by the DSM IV-TR (American Psychiatric Association, 2000).

Atypical depression is characterised by mood reactivity and positivity, significant weight gain or increased appetite, excessive sleep, a sensation of heaviness in limbs and social impairment due to hypersensitivity.

Melancholic depression is characterised by a loss of pleasure in many or all activities (anhedonia), failure to react positively to pleasurable stimuli, a more depressed mood than that of grief or loss, an exacerbation of symptoms in the morning, early waking, excessive weight loss and excessive guilt.

Psychotic major depression (psychotic depression) is a major depressive episode of melancholic nature. The person may experience delusions which are fixed false beliefs that are resistant to reason or confrontation with actual fact (Garety, 1985) or hallucinations, sensory experiences that do not exist outside of the mind (Liester, 1998).

Catatonic depression is a rare and severe form of major depression that disturbs motor behaviours. The person is mute, may be immobile or exhibit purposelessness, even bizarre movements. These movements may also be found in people experiencing schizophrenia.

Postpartum depression refers to the intense depression experienced by women after giving birth, usually setting in within three months of labour. It can cause significant hardship and impaired functioning in all aspects of life. Difficulty in relationships with spouses, family members or the new born may arise.

Seasonal affective disorder is a seasonal pattern of depression, usually with depressive episodes coming on in the autumn or winter, resolving in spring. The diagnostic criteria are reached if at least two episodes of depression have been experienced in colder months and at no other times during a two year period or more. This subtype typically affects females more often than males (Leibenluft, Hardin & Rosenthall, 1995).

Dysthymia is a chronic mood disturbance where a person experiences a low mood nearly every day for a span of two years or longer. Symptoms are slightly weaker than that of major depression, although people with dysthymia are vulnerable to episodes of major depression (also known as ‘double depression’).

Depressive disorder not otherwise specified is a category for impairing depressive disorders that do not fit the criteria for other specific depressive disorders. This category encompasses both recurrent brief depression (RBD) and minor depressive disorder. RBD is distinguished from major depressive disorder by its duration. Depressive episodes occur usually once a month, with individual episodes lasting typically less than three days. Criteria to meet diagnosis for RBD specify that episodes need to occur over at least one year (in females this needs to be independent of menstrual cycles). Minor depressive disorder refers to depression that does not meet the criteria for major depression but the person experiences at least two of the same symptoms for two weeks or longer (American Psychiatric Association, 2000).

Depressive disorders are often associated with other psychiatric disorders, notably anxiety disorders. Prominent comorbid anxiety disorders include panic disorder, generalised anxiety disorder, social anxiety disorder, obsessive-compulsive disorder and Post-Traumatic Stress Disorder (Nemeroff & Owens 2002).

Subtypes of Bipolar Disorder & Comorbidity

Bipolar disorder was originally known as 'manic depression'. It is identified by alternating episodes of mania, a state of abnormally elevated or irritable mood and/or energy, and depression (American Psychiatric Association, 2000). According to the DSM IV-TR subtypes of bipolar disorder are as follows:

Bipolar I is classified by the history of one or more manic episodes or a mix of manic and depressive episodes. A depressive disorder is not required to meet criteria for diagnosis, but depressive episodes are often present.

Bipolar II is classified as recurrent irregular hypomanic (persistent and all-encompassing elevated mood and/or energy) and depressive episodes.

Cyclothymia consists of recurrent hypomanic and dysthymic episodes, but no full major depressive or manic episodes.

Bipolar disorder not otherwise specified is similar to depressive disorder not otherwise specified in that the individual experiences some symptoms within the bipolar spectrum, such as depressive and manic symptoms, but does not meet the complete criteria for any of the three bipolar diagnoses in the DSM-IV-TR described above (American Psychiatric Association, 2000).

In the National Comorbidity Survey conducted in the United States in 1990-1992 and 2001-2003, it was found that 95% of respondents diagnosed with a form of bipolar disorder also met the criteria for three or more lifetime psychiatric disorders. These included anxiety disorders, substance use disorders, personality disorders or attention deficit hyperactivity disorder (ADHD) (Martin, 2011).

Contributing Factors to the Onset of a Mood Disorder

The etiology of mood disorders, as with all mental disorders, is complex and indefinable. Interactions of differing environmental exposures, life events, susceptibilities, genetic, developmental, biochemical, nutritional, endocrine and psychosocial factors all contribute to onset. This complexity explains the differing degrees to which people are affected and able to be treated (Kendler, Kuhn & Prescott, 2004).

Table 1 is taken from Bruder-Costello, Warner and Talati (2007) and Brown, Craig, and Harris (2007) and combines the risk and resilience factors for depressive disorders:

Table 1

Risk Factors and Resilience Factors for Depression

Common Risk Factors (which could lead to vulnerability)	Resilience Factors (protective in the presence of risk factors)
Parental history of depression	Good parenting including emotional warmth and cognitive stimulation
Difficult temperament as a child: displays behaviour such as impulsiveness, shyness, difficulty in concentration, easily upset, poor task persistence, irritability	Easy temperament as a child: displays such behaviour as adaptability in novel situations, sociability, has a low intensity of reactions.
Attachment difficulties/parental neglect	Good peer relationships
Family discard: tension between parental figures, arguments or fighting (often preceded by financial problems)	Suitability in love relationships
Previous depression/anxiety in adulthood	Has coped with past difficulties well
Ruminating over negative circumstances	

The recognition of bipolar disorder may take years based on presenting symptoms of the individual. On average, however, many people will be diagnosed before the age of 30 (Gillberg, Hellgren, & Gillberg, 2006). Family and twin studies support the position that the role of genetic influence in the onset of bipolar disorder is high. There is a likely interaction between genetic predisposition and environmental influences, including stressful life events, as is the case with depressive disorders. Individuals presenting with cyclothymia or thyroid dysfunction are also at particular risk for bipolar disorder (Rush, 2003).

Rates of Mood Disorder and At Risk Populations

The New Zealand Mental Health Survey was undertaken between 2003 and 2004 and used structured diagnostic interviews to generate DSM-IV diagnoses for nearly 13,000 New

Zealanders 16 years and over. The survey revealed that 21% of people had experienced a mental disorder in the 12 months prior, 20% of which were mood disorders. The survey also indicated the lifetime prevalence of major depressive disorder to be 16%, bipolar to be 4%, dysthymia to be 2% or any mood disorder (including people experiencing more than one disorder) to be 20% for New Zealand adults (Oakley-Brown, Wells, Scott & McGee, 2006). The following sections discuss at-risk populations in New Zealand for mood disorders.

Female individuals

According to the 2006 New Zealand Mental Health Survey, males have prevalence for a major depressive disorder of 11.4%, while females exceed this with a prevalence of 20.3% (Oakley-Brown, et al. 2006). A study by 'Next' Magazine in 2005 collected 4720 survey responses from females based on their health. Two out of every five of the women had been diagnosed with a depressive disorder. More than 30% of depressed respondents claimed that they did not receive adequate support for their symptoms. Respondents ranked family, friends, their doctor and their partner as most supportive in that order (Schumacher, 2005).

The World Health Organisation reported in 1990 that men and women appear to be equally affected by bipolar I (Murray & Lopez, 1996), with the first manic episode usually occurring in a person's early twenties (Kessler, McGonagle, Zhao, Nelson, Hughes & Eshleman, 1994). Males with bipolar II typically report the experience of a depressive episode for every hypomanic episode, with females reporting more depressive episodes (National Institute of Mental Health, 2002).

Adolescent individuals

Mood disorders are among the most experienced mental disorders by people up to the age of 18 in New Zealand, alongside anxiety disorders, conduct disorders and substance abuse

(Fergusson, Horwood & Lynskey, 1997). The Dunedin Health and Development Study (1973) determined an 18% prevalence rate of mental disorders experienced by 11 year-olds, rising to 35% in 18 year olds (McGee, Feehan & Williams, 1996.) It is common for adolescent depression to follow childhood anxiety, commonly revealing a genetic predisposition as concluded in a study conducted by Mineka, Watson and Clark in 1998.

The University of Auckland Adolescent Health Research Group discovered that female secondary school students were twice as likely as males to report depressive symptoms deemed serious enough to require professional intervention (University of Auckland Adolescent Health Research Group, 2003). Furthermore, the Youth 2000 survey found that Maori female taitamariki (youth) were almost twice as likely to have significant depressive symptoms as male taitamariki (as measured by the RADS depression scale) (University of Auckland Adolescent Health Research Group, 2003).

Older individuals

A study completed in 2003 in New Zealand found that older lonely males between 65 and 89 scored higher on the Geriatric Depression Scale, indicating a significant relationship between depression and social isolation. Researchers additionally found that depression is often a response to declining health and impairment in older adults (Alpass, 2003). Other risk factors of depression among older adults include bereavement and elder abuse (Fallon, 2006).

Homosexual, lesbian or bisexual individuals

An individual's sexuality may be a risk factor for mood disorders. King and Nazareth (2006) found evidence to suggest increased vulnerability to psychological distress and/or alcohol abuse among lesbian, gay and bisexual adults in comparison to heterosexuals. Furthermore, the Christchurch Health and Development study discovered that the risk for major

depression, conduct disorder, nicotine dependence and suicidal ideation and suicide attempts increased four-to-six fold between 14 and 21 years of age in homosexual, lesbian and bisexual individuals (Fergusson, Horwood, Beautrais, 1999). Collingwood (2011) adds that discrimination may contribute to a higher risk of depression for these individuals.

New and expectant mothers

Pregnancy and childbirth are times of psychological change for women. It is often a time of sleep disturbance, tiredness, loss of libido and feelings of anxiety about the newborn (National Institute for Health and Clinical Excellence, 2007). As stated, stressful life events are a potential risk factor for the onset of mood disorders, also increasing the risk of a pre-existing disorder (Weinberg, Tronick, 1998).

A survey study undertaken in Auckland in 2005 found that 30% of New Zealand European/Caucasian females at 4 months postpartum were experiencing depressive symptoms, yet only 13% of these women were seeking treatment. The researchers concluded that the prevalence of postnatal depression in urban New Zealand is slightly higher than that of the worldwide average, yet for the most part remains untreated (Thio, Oakley-Browne, Coverdale & Argyle, 2006). Prior to this, Christchurch researchers concluded a prevalence rate of 20% of postnatal depression in females, with 13% experiencing significant depression and 7% having a borderline level of symptoms with only 6% of the women recognising their symptoms as being characteristic of depressive disorders (McGill, Burrows, Holland, Langer & Sweet, 1995). Finally in a 2006 New Zealand study, the rates of post natal depression (using a screening questionnaire) amongst Pasifika women ranged from 7% amongst Samoan women to 30% in Tongan women (Foliaki, Kokaua, Schaaf &Tukuitonga, 2006).

Maori and Pacific Island individuals

Maori are three times more likely than non-Maori to be experiencing a depressive disorder (Magpie Research Group, 2005). It has been identified that regardless of income, occupation, or level of education, Maori have poorer health status than non-Maori (Ministry of Health, 2006). Suicide rates for Maori are 17.9 per 100,000 versus 12 per 100,000 for non-Maori (Ministry of Health, 2007).

Pacific people including Samoan, Tongan and Cook Islanders additionally experience a high prevalence of mood disorders and suicidal behaviour in New Zealand (Polotu-Endemann, Annandale & Instone, 2004). The New Zealand Mental Health Survey found an overall higher rate of suicidal ideation (4.5%) among Pacific peoples and attempts (1.2%) for the previous 12 months than non-Pacific peoples in New Zealand (Foliaki et al. 2006). The New Zealand Ministry of Health estimates that 11,000 Pacific people can expect to experience mood disorders and generalised anxiety and that these disorders are more likely to affect Pacific Island females (Ministry of Health, 2005). The prevalence of mood disorders was found to be lower among Pacific people born in the Pacific Islands than those born in New Zealand, and only 25% of Pacific peoples experiencing a mood disorder sought out professional help compared with 58% of non-Pacific peoples (Foliaki, et al. 2006).

Asian individuals

In 2003, 162 Chinese migrants over 55 were interviewed using the Geriatric Depression Scale, with 26% meeting criteria for some type of depressive disorder. Results from the study indicated more frequent visits to the doctor, lower emotional support and increased risk for depression than non-Chinese due to issues of assimilarion into the New Zealand culture (Abbott, Wong, Giles, Wong, Young & Au, 2003). Another study conducted a literature review which concluded that Asian populations tend to present (and therefore be treated) later

to mental health professionals due to a strong cultural stigma against mental illness (Ho, Au, Bedford & Cooper, 2003).

Displaced individuals

Refugees experiencing the stress of adapting to a new culture are at risk for mood disorders. Female refugees within smaller migrant communities of New Zealand (eg Vietnamese or Indonesian) have been found to have high mental health needs (Ho et al. 2003). Refugees also often have specific mental health needs associated with torture (Ho et al. 2003). Additionally there have been found to be high levels of depression among older Chinese immigrants (Ho et al. 2003).

Inmates

A 1999 psychiatric survey of New Zealand prisons concluded that inmates have significantly higher rates of bipolar disorder and major depression than non-inmates (Ministry of Justice, Ministry of Health, 1999). The survey also concluded that one quarter of all inmates had experienced a major depressive disorder and that 90% of those experiencing major mental illness also had a substance abuse disorder (Ministry of Justice, Ministry of Health, 1999).

Pathophysiology of Mood Disorders

The precise biology of mood disorders remains unclear; however, advances in neuroscience and areas of biology and brain imaging help to improve understanding of mood disorders (Nemeroff & Owens, 2002). What has been identified is that during the course of a mood disorder three primary neurotransmitters are implicated: dopamine, norepinephrine and serotonin. These operate within structures of the brain (the limbic system and hypothalamus) that regulate emotions, sleep, stress levels, sexuality and appetite (Harrison, 2002).

Treatments for mood disorders such as antidepressants can be investigated to identify how they work in the brain thus furthering the understanding of the biological causes of mood disorders. It is believed that such treatments are effective because they regulate the specific amount of implicated neurotransmitters in the brain. However, the roles that neurotransmitters play in the onset of mood disorders is still not entirely clear (Beck, Alford, 2009).

The endocrine system is implicated in the biological causation of mood disorders. This system is made up of small glands within the body that create and release hormones into the blood. These hormones regulate sexual development and stress reaction (Levinson, 2006). Hormonal irregularities may be related to depressive symptoms (Tichomirowa, Keck, Schneider, Paez-Pereda, Renner, Holsboer & Stalla, 2005).

Treatments for Mood Disorders

A furthered understanding of the biological causes of mood disorders has been achieved through the use of various treatments. Some therapy based treatments include Adlerian Therapy, behavioural therapy, existential therapy, Gestalt therapy, person-centered therapy, psychoanalytic therapy, rational-emotive therapy, reality therapy, cognitive behavioural therapy (CBT) and family systems therapy (Segal, Mark & Teasdale 2002).

CBT focuses on human thought, as many people with psychological disorders, particularly depressive, anxiety, and sexual disorders have been found to display dysfunctional assumptions and thoughts (Beck, 1983). Cognitive therapy has been found to be effective for treating depression, and moderately effective for anxiety problems (McLeod, 1998).

In addition to CBT, there are some commonly prescribed medications for mood disorders including antidepressants. Antidepressants come in various forms, the most

common being Selective Serotonin Reuptake Inhibiters (SSRI's). Unless there are specific reasons for choosing another type of antidepressant, it has been found that the most suitable antidepressant for first-line treatment of a mood disorder is a SSRI (National Institute for Health and Clinical Excellence, 2004). This is because the relative safety of SSRIs in an overdose makes them preferable to the alternative, tricyclic antidepressants or monoamineoxidase inhibitors (Gelenberg & Hopkins, 2007). SSRIs prevent the reuptake of the neurotransmitter serotonin back into the nerve endings, associated with the onset of mood disorders. Some currently available SSRIs include fluoxetine, citalopram, sertraline, paroxetine and escitalopram (Jacobson & Jacobson, 2001).

Limitations of treatment

The successful treatment of a mood disorder is highly variable. Variables include compliance of the individual with treatment and the severity of the experience (Jefferson, 2000). The Ministry of Health in British Colombia produced a guideline in 2004 containing issues surrounding the treatment of mood disorders, many of which are also present in New Zealand. These issues include a stigma associated with mood disorders leading to lack of help sought; inadequate duration or dosage of antidepressants; inadequate education received by the individual about the nature of mood disorders; limited access to mental health practitioners and lack of treatment maintenance (Ministry of Health British Columbia, 2004). Available antidepressant drugs are safe and effective, but less than half of all individuals achieve complete remission after therapy with a single antidepressant, while others may display partial or intolerant responses to treatment (Nemeroff & Owens, 2002).

A 2005 literature review (Goldberg & Ghaemi, 2005) looked at the risks when using antidepressants and antipsychotics to treat bipolar disorders. It was reported that individuals with a rapid cycling form of bipolar showed worsening of rapid cycling with the use of

antidepressants, with a possibility of exacerbating depressive symptoms in bipolar I and increasing antidepressant intolerance in bipolar II. Furtermore, antidepressants have the potential to aggravate bipolar mania symptoms and may accelerate cycling and heighten suicide risk in adolescents with a bipolar disorder.

A 2007 study outlined some limitations of contemporary antidepressants in the treatment of depressive disorders (Papakostas, 2007). Some side effects noted in the use of antidepressants are distress, discomfort, disability, and morbidity. The authors recommend the development of a treatment that has lower incidences of side effects or to use treatment strategies that will alleviate side effects to improve the standard of care for mood disorders. It has also been reported that between 30% and 40% of individuals taking antidepressants develop some degree of sexual dysfunction (Rothschild, 2000). Additionally, it was found in 2004 that the use of SSRIs and new antipsychotics is associated with adverse cardiac and vascular effects, a significant hazard, particularly for those with cardiovascular disorders (Pacher & Kecskemeti, 2004). SSRIs are also reported to lead to gastrointestinal side effects including nausea and diarrhoea; central nervous system side effects including anxiety, insomnia, sedation and nightmares; bleeding disorders such as bruising and gastrointestinal bleeding; Serotonin Syndrome causing extreme agitation, hyperthermia, delirium or seizures and Discontinuation Syndrome causing dizziness, nausea, weakness, irritability and headache (Khawam, Laurencic & Malone, 2006).

Finally, there are some limitations in using CBT. CBT is not easily accessed by all who seek it due to high cost (Marchand, Germain, Reinharz, Mainguy & Landry, 2004). There are also ethical considerations. CBT is a directive therapy aimed at changing cognitions, in some cases forcefully. Additionally, the cognitive model may be narrow in scope (McCleod, 2008). As with any treatment, questions also exist regarding the long-term effectiveness of CBT (Butler, Chapman, Forman & Beck, 2006).

These issues of low compliance, incorrect dosage, inadequate education, low access to mental health practitioners, lack of treatment maintenance, low remission rates, intolerant responses and side effects when using conventional treatments highlight a need to develop alternative treatment options in the treatment of mood disorders.

Complementary and alternative treatment

It is not uncommon for people with mood disorders to try and manage the illness themselves. Complementary and alternative medicine (CAM) is defined as those "medical and health care systems, practices, and products that are not presently considered to be part of conventional medicine" (National Center for Complementary and Alternative Medicine, 2002). As discussed, conventional treatments may often be unavailable or ineffective. Chong and colleagues (2008) concluded that the use of CAM is not uncommon. Data was collected from patients in medical wards at a Brunei hospital based on their use of CAM. Of their 568 participants, one fifth had used CAM in the past 12 months.

According to Beyond Blue, evidence-based CAM for depressive disorders may include but are not limited to St Johns Wort (Hypericum perforatum), physical exercise, self-help books involving CBT and light therapy (Beyond Blue Australia, 2008). A study conducted in 2005 based on data from 32 million adults concluded that common forms of CAM in the United States of America in 2002 were herbal therapy (18.6%), relaxation (14.2%) and chiropractic techniques (7.4%) (Tindle, Davis, Phillips & Eisenberg, 2005). It was also reported in a New Zealand study (Nicholson, 2006) that of 1043 people surveyed, one in three people had used vitamins and minerals as a form of CAM. Similarly, it was found in a 2008 study that of 568 participants surveyed about their use of CAM, of those who had used CAM in the last 12 months, 35.8% had used vitamin and mineral supplements. The most common reasons for using CAM in the sample were anxiety, depression and insomnia

(Chong, Rajendran & Wint, 2008). Additionally, in a national Australian sample, 57% of individuals regarded vitamins, minerals, tonics or herbal medicines as potentially helpful for treating depression (Jorm, Christensen, Griffiths & Rodgers, 2002). With such high reports of vitamin and mineral supplement use of CAM, it seems that there may be popularity for vitamins and minerals as a potential alternative form of treatment for mood disorders.

Micronutrients and Mood

There is a significant breadth of knowledge on the benefits of vitamin and mineral intake yet there is little discussion on how these work on brain mechanisms. This leaves open an area of research in need of further investigation. There may be potential benefits in using multivitamins or micronutrients (vitamins, minerals and amino acids) when treating mood disorders.

Kaplan and colleagues (2007) reviewed literature on the effects of vitamins and minerals on mood. One formula reviewed was a 36-ingredient micronutrient containing 16 minerals, 14 vitamins, 3 amino acids and 3 antioxidants named EMPowerplus. The review described the effect that the nutrients had on neurotransmitters in the brain. Four alternate models examined how the use of micronutrient supplements such as EMPowerplus may be able to relieve symptoms of mood disorders (Kaplan, Crawford, Field & Simpson, 2007).

The first model presented by Kaplan and colleagues (2007) suggests that errors in metabolism may result in unstable mood, leading to possible mood disorders. Mutation of metabolism is correctable by giving the malnourished individual additional vitamins, thereby restoring the deficiencies, correcting metabolism and creating a more stable mood.

A second model suggests that deficient methylation processes may lead to unstable mood. Methylation reactions activate enzymes and genes in our brains, and regulate protein that genes create. Correct neurotransmitter synthesis is not possible without methylation. It is

not certain where the direction of causality lies, deficiencies in methylation processes may result in mood disorders, or mood disorders may lead to deficiencies in methylation processes. In either instance it seems logical that methylation processes need to be corrected in order for mood to remain stable.

The next model presented suggests that nutrient deficiency may result in unstable mood by way of gene expression alteration. Nutrients have been shown to alter gene expression, as displayed in a study completed in 2003 (Waterland & Jirtle, 2003). It was found that nutrient supplements given to mice altered the expression of certain genes. For this reason it may be possible that nutrient deficiencies alter the expression of genes that may influence mood.

The final model presented by Kaplan and colleagues (2007) explains that long-term insufficiency of particular nutrients may cause a development of unstable mood over a long period of time. For this reason, the use of a daily micronutrient would be required to maintain a stable mood.

The models put forward by Kaplan and her colleagues make a convincing argument for micronutrients as a worthwhile alternative treatment to mood disorders. A brief look into how particular vitamins and minerals work with certain neurotransmitters in the brain further adds to this evidence base.

Calcium plays an important role in sending messages between different cells (Gilroy, Read & Trewavas, 1990); iron has an important role in ensuring that enough oxygen is in the brain (Gutteridge, 1992); magnesium is involved in over 300 chemical reactions in the human body (Seelig, 1994) and zinc is involved in metabolism (Cuajungco & Lees, 1997). With regards to some of the B vitamins; vitamin B9 (folic acid) is known to heighten serotonin function which is associated with depression (Malouf, Grimley & Areosa, 2004); vitamin B12 which plays a part in synthesis of monoamine neurotransmitters (Bottiglieri, Laundy,

Crellin, Toone, Carney & Reynolds, 2000) is also associated with depression and vitamin B6, and is involved in the synthesis of a wide variety of neurotransmitters, namely those associated with anxiety and depression (Pietz, Benninger, Schäfer, Sontheimer, Mittermaier & Rating,1993).

With having an established theory as to how vitamins and minerals function in the brain, it is important to evaluate how vitamins and minerals influence mood disorders and other psychiatric symptoms. There have been a number of studies done on the use of micronutrients and their effect on psychiatric symptoms.

Various micronutrient supplements have been used in double-blind randomised control trials, resulting in changes in mood. In 1992, 1081 healthy males between the ages of 17 and 29 trialled a micronutrient formula containing B_1, B_2, B_6, B_9, B_{12}, vitamin C and vitamin E for eight weeks. Males with previous nutrient deficiencies showed significant clinical improvements in fear, nervousness and depressive symptoms (Heseker, Adolf, Eberhardt & Hartmann, 1992). In 1995, 119 male and 90 female healthy university students (between 17-27 years) used a micronutrient formula containing B_1, B_2, B_3, B_6, B_9, B_{12}, vitamin A, C, D and H for one year. Both males and females reported feeling more agreeable, composed and having better mental health compared to placebo groups (Benton, Shan & Hardy, 1995).

Double-blind randomised control trials were additionally conducted in 2007 and 2008 on non-healthy participants. Vitamins B_1, B_2, B_3, B_5, B_6, B_9, B_{12}, vitamins C, D, E and H, calcium, copper, iron, magnesium, manganese, phosphorus, potassium, selenium and zinc were given to 225 hospitalised older patients over 65 experiencing varied symptoms of depression. The trial ran for six weeks. Interestingly however, placebo and micronutrient groups differed on depression scores at six months. Micronutrient effects were observed in non-depressed participants, those with mild symptoms of depression and those with severe

depression (Gariballa and Forster, 2007). In 2008, a micronutrient treatment containing B_1, B_2, B_3, B_6, B_9, $B_{12,}$ vitamins A, C, E and H, calcium, copper, iron, magnesium, manganese, selenium and zinc was trialled with 59 nursing home residents. There were no effects on anxiety scores, however there was a significant reduction in depression scores compared to the placebo group which showed no change (Gosney, Hammond, Shenkin & Allsup, 2008).

Two more double-blind randomised control trials were conducted in 2009 and 2010. 422 healthy females in Guatemala (between 15-49 years) were trialled for 12 weeks using a micronutrient formula containing $B_{9,}$ $B_{12,}$ iron and zinc in 2009. Almost half of the participants had depression scores above the clinical cut-off before the trial, with these scores lowering by the end of the trial (Nguyen, Grajeda, Melgar, Marcinkevage, DiGirolamo, Flores & Martorell, 2009). In 2010, 273 post-stroke survivors with an average age of 63 using a micronutrient formula containing B_6, B_9, and B_{12}. The results demonstrated a lower risk of major depression when compared to the placebo (Almeida, Alfonso, Hankey & Flicker, 2010).

Finally, a trial was conducted in 2011 with 50 healthy men between 50-69 years using a micronutrient formula including B_1, B_2, B_5, B_6, B_9, $B_{12,}$ vitamin E, bioflavonoids, calcium, choline bitartrate, inositol, iron, lysine hydrochloride, magnesium, tyrosine and potassium. Compared with the placebo, participants experienced an improvement in alertness and general daily functioning, and showed a reduction in overall total anxiety and depression scores (Harris, Kirk, Roswell, Vitetta, Sali, Scholey & Pipingas, 2011).

The aforementioned studies demonstrate a convincing argument for the effect of micronutrient treatments on changes in mood. These results are limited however, due to their sampling of non-depressed participants.

Micronutrients and Mood Disorders

The following studies demonstrate the effects of micronutrients in participant samples experiencing mood disorders.

A study completed by Kaplan and colleagues in 2001 treated 11 people diagnosed with bipolar disorder between 19-46 years of age on psychotropic medications with EMPowerplus. After a six month open-label trial, the need for psychotropic medications decreased by 50% and symptom reduction ranged from 55%-66% (Kaplan, Simpson, Ferre, Gorman, McMullen & Crawford, 2001). An open-label trial using EMPowerplus in bipolar participants was also conducted in 2001. Results found a clinical improvement in bipolar symptoms in 19 of the 22 adolescent and adult participants (Popper, 2001).

A 2004 study focussed on children with mood and behavioural problems using EMPowerplus. Nine children completed the open-label trial and their parents completed the Child Behaviour Checklist (CBCL), Youth Outcome Questionnaire (YOQ), and Young Mania Rating Scale (YMRS). After eight weeks on the nutrient supplement the children showed significant improvement on seven of the eight CBCL scales, the YOQ, and the YMRS (Kaplan, Fisher, Crawford, Field, & Kolb, 2004).

A 2008 study looking at the self-help interventions used by people experiencing depressive symptoms trialled various vitamins and their effect on mood. In a double-blind randomised control trial, 81 healthy young adults experiencing depressive symptoms took vitamin C for 14 days. Compared to the placebo group, depression symptoms significantly decreased (Jorm & Morgan, 2008). Additionally, a 2009 study found that after six months using EMPowerplus, 358 adults with bipolar disorder showed a 45% decrease in symptoms (Gately and Kaplan, 2009).

Finally, a 2010 case study had significant results after using EMPowerplus to treat a 21 year old female experiencing mood disorders. The woman had experienced bipolar II

disorder, ADHD, social anxiety and panic disorder for eight years and was unable to control her symptoms with medication. She used EMPowerplus for eight weeks and significantly improved her symptoms. After this eight week period she chose to come off the supplement and her symptoms reverted back to their original state, with her ADHD symptoms worsening. She then chose to go back onto the supplement and her symptoms improved once again. After one year on the supplement she was in remission from all of her illnesses (Rucklidge & Harrison, 2010).

There is a necessity for double-blind randomised control trials using micronutrients in participants experiencing mood disorders. There is also a need for more exploration beyond the use of EMPowerplus. These limitations considered, the results from such studies warrant further research into the use of micronutrient supplements as an alternative form of mood disorder treatment.

Acceptance toward Alternative Treatments

There has been a great deal of work in the area of alternative treatments. One researcher in the area defines the acceptance of alternative treatments as such:

> The acceptance of alternative treatments refers to the judgments about the treatment procedures by non-professions, lay persons, clients, and other potential consumers of treatment. Judgments of acceptability are likely to embrace evaluation of whether treatment is unfair, reasonable, and intrusive, and whether treatment meets with conventional notions about what treatment should be. In general, acceptability refers to the overall evaluation of the procedures (Kazdin, 1980).

It is important to research people's acceptance toward alternative treatments for several reasons. Research is important for the care of the individual seeking treatment. Their opinions need to be at the forefront of consideration. If the individual does not accept the alternative

treatment there is likely to be low compliance and treatment will not be accurately administered. Additionally, it is important is to evaluate legal and ethical acceptance. If the treatment infringes on rights of the individual, the treatment will not be accepted by them or the general public (Kazdin, 1980). Furthermore, the individual using the alternative treatment will be susceptible to the opinions of close family members or friends (known as the subjective norm). If family members or friends believe the alternative treatment is not worthwhile, there is likelihood that the individual using the treatment will cease doing so (Kazdin, French & Sherick, 1981).

The acceptance of alternative treatments by the general public is important. For some mental illnesses, there are several available treatment options. Treatments that are viewed as more accepted by the general public are more likely sought out and administered by individuals than those that are not (Kazdin, 1980). This demonstrates that it is the view of the general public that decides the acceptability of a treatment rather than its efficacy. Other factors impacting on acceptance of the public may include the level of success in the past for individuals that have used alternative treatments; the ease of administration of new alternative treatment and the level of safety when administering the treatment (Kazdin, 1977). Additionally, it has been found that females are more likely than males to be accepting towards alternative treatments (Kazdin, 1980; Ernst & White, 2000).

Acceptance toward Micronutrient Treatment

In an Australian survey conducted in 1999, respondents were given a list of pharmacological treatments to rate as helpful or harmful. The participants were also given a vignette describing the symptoms of depression or schizophrenia. For the depression vignette, 57% of respondents rated vitamins, minerals, tonics or herbal medicines as helpful and 3% rated them as harmful. Antidepressant medication was rated as helpful by 29% and as harmful by

42% of respondents. For the schizophrenia vignette, antidepressants were rated as helpful by 38%, followed by vitamins and minerals with 34% and antipsychotics with 23% (Jorm, Korten, Jacomb, Christensen & Henderson, 1999). The majority of these Australian respondents demonstrated that they are accepting of vitamin and mineral treatments for depression, which may mean that others are also.

Certain groups in particular may be more accepting towards the use of micronutrients as an alternative treatment for mood disorders than others.

A study completed in 2002 concluded that people whose lifestyles were healthier were more likely to use dietary supplements (Foote, Murphy, Wilkens, Hankin, Henderson & Kolonel, 2003). For this reason it would be expected that people who lead healthy lifestyles may be more accepting towards micronutrients as an alternative treatment for mood disorders, as they may already frequently use them.

In a review of alternative medical treatment providers (Baer, 2004), it was concluded that the drive toward professionalism seen by medical health professionals is a factor that limits practitioner provision of CAM. The author states that "professionals have been defined by a set of traits including specialised skills and training…limited membership to multiple associations, a code of ethics, a service orientation, income by fees rather than wages, universalism, and recognition of their authority by the larger society." The ideal in reaching professionalism through limited use of CAM may be a barrier for medical and healthcare professionals in the present study to be accepting of micronutrients as an alternative treatment for mood disorders.

There is likelihood that individuals previously experiencing mood disorders will be more accepting of micronutrients as an alternative treatment. This may be as a result of trialled and rejected previous treatments, leading them to seek out alternative options (Kessler, Soukup, Davis, Foster, Wilkey, Van Rompay & Eisenberg, 2001). Research

conducted in 2002 concluded that individuals experiencing mood disorders often seek out alternative treatments. This is usually as a reflection of limitations in conventional treatments as they are not universally effective (Manber, Allen & Morris, 2002).

Finally, people with lower annual income may be less accepting towards micronutrients as an alternative treatment for mood disorders. This may be due to living in an environment where health products such as multivitamins are an unnecessary added expense, leading to low usage rates and thus rejection. It was reported in studies conducted by the United States Centers for Disease Control and Prevention in 2004 and 2005 that ethnic minority females with low incomes are amongst the most likely to have lower usage rates of multivitamin supplements (Centers for Disease Control and Prevention, 2004; 2005).

Rationale

With the information presented, it would appear that there is widespread use of micronutrient supplements as an alternative form of mood disorder treatment in people attempting to treat their own symptoms (Chong, Rajendran & Wint, 2008; Jorm, Christensen, Griffiths & Rodgers, 2002). There is also sufficient evidence to suggest that the use of micronutrient supplements help to restore nutritional deficiencies in the brain that can be associated with mood disorder experience (Kaplan, Crawford, Field & Simpson, 2007; Malouf, Grimley & Areosa, 2004; Bottiglieri, Laundy, Crellin, Toone, Carney & Reynolds, 2000; Gariballa & Forster, 2007). Additionally, there is evidence that micronutrients have fewer side effects than antidepressants or other medications (Dalmiya, et al. 2009). Micronutrients may thus be a valuable complementary or alternative treatment option for mood disorders. However, treatments that are viewed as more accepted by the general public are more likely to be administered by individuals than those that are not (Kazdin, 1980).

Acceptance toward micronutrient treatments first needs to be addressed before they are able to become more widely used to treat mood disorders. Presently, there is a lack of research available focussing on the acceptance towards the use of micronutrient supplements as an alternative treatment for mood disorders. This highlights why the current research is necessary.

Aim

Without the acceptance of micronutrients as a mood disorder treatment from mental health professionals or consumers of treatments, such valuable treatments may become under-utilised. The aim of this research is to better understand the acceptance of mental health professionals and treatment consumers (among other members of the public) towards micronutrients as an alternative treatment for mood disorders. In addition, this research wishes to aid individuals experiencing mood disorders to be aware of as many treatment options as are available.

Hypotheses

It is hypothesised that this study will uncover several issues.

1. It is predicted that females will be more accepting toward micronutrients as alternative mood disorder treatment than males.
2. It is predicted that individuals working as mental health professionals will be less accepting of micronutrients as an alternative treatment for mood disorders.
3. It is predicted that individuals indicating a healthy lifestyle will be more accepting of micronutrients as an alternative treatment for mood disorders.
4. It is predicted that individuals previously experiencing mood disorders will be more accepting of micronutrients as an alternative treatment for mood disorders.

5. It is predicted that individuals with lower annual income will be less accepting towards micronutrients as an alternative treatment for mood disorders.

Method

Participants

The final sample consisted of 661 participants (141 male, 520 female), with 244 claiming to have experienced a depressive disorder (48 male, 196 female) with a mean age of 34 years (*SD*= 14; range = 18-74); 7 participants claiming to have experienced a bipolar disorder (three male, four female) with a mean age of 32 years (*SD*= 14; range = 20-54); 84 participants claiming they were unsure if they had experienced a mood disorder (22 male, 62 female) with a mean age of 30 years (*SD*= 14; range= 18-78) and 326 participants (67 male, 259 female) claiming to have never experienced a mood disorder, with a mean age of 34 years (*SD*=14; range= 18-80). The majority of participants were residing in New Zealand at the time of survey completion (84.2%).

Initially, participants were recruited by way of advertising on campus of the University of Canterbury and suburban Christchurch areas (this advertisement can be found in Appendix I); links to the survey were posted on online social networking websites including www.facebook.com and www.twitter.com; advertising for the survey was posted on the University of Canterbury website on primary research supervisor Dr. Julia Rucklidge's profile page; and participants of previous micronutrient studies conducted at the University of Canterbury were notified of the study. Initially these methods combined recruited approximately 100 of participants. Links to the survey were then emailed to all undergraduate and postgraduate psychology students enrolled in 2011 at the University of Canterbury by the psychology administration department, increasing the sample size to approximately 440. This caused the sample to skew as the majority were undergraduate psychology students, with 80% of them female. In an attempt to remedy this, primary research supervisor Julia Rucklidge emailed the survey link to colleagues from the New Zealand College of Clinical

Psychologists, the American Psychological Association and 'The Press' newspaper in Christchurch. This increased the sample to a final total of 661 participants with 78.6% female and 21.4% male.

Measures

Medical Outcomes 36-Item Short-Form Community Health Survey

Parts of the survey created for the purpose of this study were adapted from the Medical Outcomes 36-Item Short Form Community Health Survey Version 1.0 (SF-36). The SF-36 is a multi-purpose, short-form generic health survey with functional health and well-being scores in the form of Likert scales (Ware & Sherbourne, 1992).

The reliability of the scale has been estimated using both internal consistency and test-retest methods. As reported by Grandek and colleagues in 1998, the SF-36 has good internal consistency, and a Cronbach's Alpha of 0.92, exceeding the minimum standard of 0.70 recommended for measures (Tsai, Bayliss, & Ware, 1997). The scale additionally has adequate discriminatory power and good correlation with other measures (Beaton, Hogg-Johnson & Bombardier, 1997). A review of the first 15 published studies testing the SF-36 also revealed that the median reliability coefficients for the SF-36 was equal or greater than 0.80 (Ware, Snow, Kosinski & Gandek, 1993).

Validity has been determined as cited in the SF-36 bibliography (Turner-Bowker, Bartley, Ware, 2001), by comparison between the SF-36 and 225 other measures.

MacArthur Network on Socio Economic Status and Health Socio-demographic Questionnaire

For questions relating to Socio Economic Status (SES), questions from the The MacArthur

Network on Socio Economic Status and Health Socio-demographic Questionnaire were adapted (Stuart, 2009).

The reliability of the questionnaire was tested by Wechsler and colleagues in 1995 and determined inter-rater reliability of r>.99 and p<.001. Test-retest reliability found a high correlation (r=.92 and p<.001) (Wechsler, Basch, Zybert, Lantigua & Shea, 1995).

Validity of the questionnaire has been determined through comparison with other questionnaires (Patterson & Chapman, 2004).

Acceptance toward the use of micronutrients in the treatment of mood disorders survey

The survey created for the purpose of this study was made up of 12 separate sections from alternative sources. Details of the sections are outlined as follows:

Section one (questions 2-6) was demographic in nature, asking the gender, age, marital status and ethnicity of the participants. These questions were created by the researchers of the present study.

Section two (questions 7-12) was comprised of SES related questions including employment categories, highest qualification, annual income and currency of this income (participants who chose not to disclose income amount did not answer question 12). When participants were asked about employment category they were asked to input what industry they were employed in and what their job title was. These descriptions were then coded into one of 30 employment categories as displayed on www.seek.co.nz, a popular international employment seeking website. The participant numbers in each group were small and as such these 30 categories were later combined to create 13 categories.

Continuing to cover SES, section three (questions 13-16) asked participants about household arrangements, including how many people live in each participant's household and

which people bring income into the household. The questions for sections two and three were taken from The MacArthur Network on Socio Economic Status and Health Socio-demographic Questionnaire (Stuart, 2009).

Section four (questions 17-21) adapted questions from the SF-36 and related to perceived health and its importance. For example, Question 19 listed 10 activities that participants may do during a typical day. The participants were then asked to state how much their health limits them in these activities. They responded using a three-point Likert Scale ranging from 'Yes, limited a lot' to 'No, not limited at all'. Only parts of the SF-36 were used to create this survey, comprising of questions from the 'General Health' and 'Physical Functioning' sections.

Section five (questions 21- 26) asked about possible usage of CAM options (participants with no history of alternative treatment usage did not answer question 23). Questions included a selection of natural health therapies/products used in the past, how often the treatments were used, in what capacity and how often the participant might visit an alternative treatment provider.

Section six (questions 26-30) asked participants about possible diagnosed or suspected history with mood disorders. If this answer was confirmed, participants were asked to specify which type of mood disorder they experienced. They were then asked if they engaged in a 'conventional' (defined for the purpose of the survey as any form of psychotherapy, counselling, any kind of professional talking therapy and/or any prescribed medication) or 'alternative' (any non 'conventional') treatment for this mood disorder, if any. If the participant had no experience with a mood disorder the remainder of this section was skipped (questions 27, 28, 29 & 30).

Section seven (question 31) was comprised of a five-point Likert Scale asking participants how 'likely' or 'unlikely' they would be to use a selection of treatments if they

hypothetically came to be diagnosed (or re-diagnosed) with a mood disorder (ranging from 'Very Unlikely' to 'Very Likely'). Treatments listed were antidepressants, antipsychotic medications, CBT, family therapy, vitamins, minerals and amino acids, group therapy, individual therapy, support groups, electroconvulsive therapy, acupuncture, massage therapy, yoga, light therapy, magnetic therapy, hypnosis, herbal medicine and breathing exercises. This choice of treatments was taken from the 2010 CAM survey of hospitals created by the Samueli Institute and the American Hospital Association/Health Forum (Ananth, 2011).

Sections eight, nine and ten (questions 32-34) assessed participants' acceptance toward the use of micronutrients in the treatment of mood disorders. It was made up of 20 five-point Likert Scale questions (ranging from 'Strongly Disagree' to 'Strongly Agree'). The majority of these statements were taken from the 2010 CAM survey of hospitals created by the Samueli Institute and the American Hospital Association/Health Forum (Ananth, 2011). The remaining statements (questions 32d, 33g, 34a, 34c and 34f) were created for the purpose of this study achieving a satisfactory Chronbachs Alpha of .832.

Section 11 (questions 35, 36) asked participants if micronutrients and conventional treatments were found to be equally effective for treating mood disorders and they came to be diagnosed with (or re-diagnosed with) a mood disorder, which treatment would they choose first.

Section 12 (questions 37, 38) asked if micronutrients and conventional treatments were found to be equally effective for treating mood disorders and someone the participant knew under the age of 18 came to be diagnosed with a mood disorder, how much they would agree or disagree with them using micronutrients as a treatment, based on a five-point Likert Scale (ranging from 'I would strongly disagree' to 'I would strongly agree').

At the completion of these 12 sections participants were free to ask questions or leave comments on the subject matter of the survey.

The survey in its entirety can be found in Appendix III.

Procedure

The survey was launched to the public on the Qualtrics Survey Software website on the 31st August 2011. It was then removed from Qualtrics on the 24th November 2011. After participants had been recruited they were given a link to the Qualtrics Survey Software website to complete the survey (http://canterbury.qualtrics.com/SE/?SID=SV_9ntJcZOcPTImnHK). The survey began with an information and consent sheet which participants were required to read and agree to before commencing. This information and consent sheet can be found in Appendix II. The participants then went on to complete all ten sections of the survey. Each section required forced responses for the participants to continue, in order to avoid missing data.

The study was approved by the University of Canterbury Human Ethics Committee (UCHEC). Participants were offered entry into a draw of one of two 2Gig 4th Generation iPod Shuffles at the completion of the survey as a thank you for their time. The entry into the iPod draw was completely separate to the participants' survey thereby keeping the survey anonymous and disassociating any previous responses from entry as per requirement of the UCHEC. The study approval confirmation from UCHEC can be found in Appendix IV.

Upon completion of the survey participants were thanked for their time and supplied with contact information for the researchers if they sought debriefing or further information. The survey then automatically uploaded their responses before either closing, or opening a separate survey for entry into the iPod draw.

'Acceptance' Score Calculation

In order to test all hypotheses for this research, overall scores for each participants' 'acceptance' toward the use of micronutrients as an alternative treatment for mood disorders were calculated. Totals were calculated from each question in the attitudes sections of the survey (sections eight, nine and ten, questions 31, 32, and 33) in order to determine these acceptance scores. Appropriate questions were reverse coded (31b, 31f, 32e, 33c and 33d) and each score from these questions was added together for an overall 'acceptance' score. Each question was scored out of five as the questions were answered using five-point Likert Scales. For example, an answer of "strongly disagree" would get a score of one out of five. If the participant were to choose "strongly agree" as their answer for the next question, this would get them a score of five out of five for that question. These answers would then be added together for an overall score of six. This process was carried out for all 20 questions to give the participant an overall 'acceptance' score out of a possible 100, ranging from 20-100 (M=69.7).

'Healthy Lifestyle' Score Calculation

Overall 'healthy lifestyle' scores were calculated from each question in the health section of the survey (section four, questions 16, 17, 18a-j, 19a-d and 20a-d). Appropriate questions were reverse coded (16, 17, 19a, 19c, 20b and 20d) and each answer was added together for an overall 'healthy lifestyle' score. Each question was out of five as the questions were answered using five-point Likert Scales. For example, an answer of "strongly disagree" would get a score of one out of five. If the participant were to choose "strongly agree" as their answer for the next question, this would get them a score of five out of five for that question. Question 19 was scored out of three and followed the same process, gaining the participant a total possible score of three out of three. This process was carried out for all 20

questions to give the participant an overall 'healthy lifestyle' score out of a possible 80, ranging from 20-80 (M=61.2).

Statistical Analyses

Data were analysed using 'STATISTICA' version 9 and the Statistical Package for Social Science version 19.0. T-tests for independent samples were conducted to compare group means between gender groups and 'acceptance' scores, as well as healthcare and medical professionals (including but not limited to psychiatrists, family doctors or general practitioners, other medical doctors, psychologists, nurses, social workers, counsellors or psychotherapists) against other professional groups and 'acceptance' scores. An Analysis of Variance (ANOVA) and Tukey honest significant difference post hoc test were conducted to compare all professional group means and 'acceptance' scores. Pearson product-moment correlations were conducted to determine if relationships existed between 'acceptance' scores and 'healthy lifestyle' scores and 'acceptance' scores and annual income. A final ANOVA was conducted to compare group means between participants and their experiences with mood disorders against their 'acceptance' scores.

Following statistical analyses, percentages were calculated for each group based on their chosen answer to the question "If micronutrients and conventional treatments were found to be equally effective and you came to be diagnosed (or re-diagnosed) with a mood disorder what would your first choice of treatment be?" These percentages can be found in Appendices V and VI (Tables 5 and 6). Chi-square statistics were also calculated to investigate differences in first treatment choices between males and females, varied experiences with mood disorder, and income groups. Averages were also calculated for each group for answers out of 5 to the question "If micronutrients and conventional treatments were found to be equally effective for treating mood disorders and someone you knew under

the age of 18 came to be diagnosed with a mood disorder, would you agree with them using micronutrients as a treatment?" (Results of all percentage and average calculations can be found in Tables 5 and 6, Appendices V and VI).

Results

Preliminary Analysis

All data were examined for errors and missing items. All efforts were made to avoid these by forced response requirements; however, if a participant had omitted or incorrectly filled out more items than allowed for any given question, that participant's answers on that particular question were disregarded or corrected where possible. After removal of errors and missing items this study had an 86% completion rate with 769 participants beginning the survey and 661 (141 male, 520 female) completing.

Overall it was found that 10.6% (N=70) of participants fell between the 'disagree' and 'neutral' range of acceptance ('acceptance' score 40-59), 76.7% (N=507) between the 'neutral' and 'agree' range of acceptance ('acceptance' score 60-79) and 12.7% (N=84) between the 'agree' and 'strongly' agree range of acceptance ('acceptance' score 80-100) towards the use of micronutrients as an alternative treatment for mood disorders. Additionally, if any participants came to be diagnosed or re-diagnosed with a mood disorder, and micronutrients were found to be equally effective to conventional treatments, 56.6% said that they would choose to use micronutrients first (31.3% chose conventional, 12.1% chose other or none).

Exploratory Analyses

Prediction 1: Females will be more accepting to micronutrients as an alternative mood disorder treatment than males.

An independent-samples t-test was conducted to compare 'acceptance' scores in male and female groups (coded as 1 and 2 respectively). The possible range on the 'acceptance' scores

was 20-100, where higher scores indicated higher acceptance towards the use of micronutrients as a treatment for mood disorders. The obtained range was 42-98.

There was a marginal effect on 'acceptance' scores for females (M=70.00, SD=8.60) and males (M=68.55, SD=9.34); t(659)=1.74, p=0.082. Marginal significance suggests that the results may have occurred from random chance alone. Marginal significance therefore does not give authorisation to suggest significance (Siegel, 1990). These results suggest that males and females do not have different 'acceptance' scores towards the use of micronutrients in the treatment of mood disorders.

All participants were asked at the conclusion of the survey the following question: "If micronutrients and conventional treatments were found to be *equally* effective for treating mood disorders and you came to be diagnosed with (or re-diagnosed with) a mood disorder, which treatment would you choose first?" Participants had the choice to answer from the following choices: conventional treatment, micronutrient treatment, other treatment or none. A Pearson's Chi Square test was performed to determine if males and females were distributed differently across conventional treatment choice (male N=43, female N=164) and micronutrient treatment choice (male N=78, female N=296). The test failed to indicate a significant difference, $X^2(1)=3.07$, $p= 0.92$.

Additionally, gender percentages in response to the question "If micronutrients and conventional treatments were found to be *equally* effective for treating mood disorders and you came to be diagnosed with (or re-diagnosed with) a mood disorder, which treatment would you choose first?" were calculated and are displayed in Tables 5 and 6 (Appendices V and VI).

Prediction 2: Individuals working as healthcare and medical practitioners will be less likely to accept micronutrients as an alternative treatment.

An independent-groups t-test was conducted to compare 'acceptance' scores in healthcare and medical professional (including but not limited to psychiatrists, family doctors or general practitioners, other medical doctors, psychologists, nurses, social workers, counsellors or psychotherapists) and non healthcare and medical professional groups (coded as 1 and 0 respectively). The possible range on the 'acceptance' scores was 20-100, where higher scores indicated higher acceptance towards the use of micronutrients as a treatment for mood disorders. The obtained range was 42-98.

There was a significant difference in 'acceptance' scores for healthcare and medical professionals (M=68.30, SD=9.01) and non healthcare and medical professionals (M=70.51, SD=8.54); t(659) =3.12, p=0.002. A small effect size was also indicated (Cohen's *d*=0.25). These results suggest that people in different professions may have different 'acceptance' scores towards the use of micronutrients in the treatment of mood disorders. Specifically, healthcare and medical professionals appear to score lower in 'acceptance' scores on average when compared with other professions. Mean 'acceptance' scores and standard deviations for all profession groups are displayed in Table 2.

Following the t-test a one-way ANOVA was conducted to compare the effect of profession overall on 'acceptance' scores. The possible range on the 'acceptance' scores was 20-100, where higher scores indicated higher acceptance towards the use of micronutrients as a treatment for mood disorders. Professions were coded as detailed in the Method Section, displayed in Table 2. This table additionally displays the number in each group, the group means and standard deviations. There was a significant effect of profession on 'acceptance' scores ($F(12, 648) = 2.25$, $p=0.008$). Post hoc comparisons using the Tukey honest significant difference test were conducted as a result, indicating that the mean for the 'Self Employment'

group (N=14, M=76.71, SD=10.28, p=0.014) was significantly different than the other employment groups. Taken together, these results suggest that self-employment has an effect on 'acceptance' scores. Specifically, people who are self employed generally score higher in acceptance towards the use of micronutrients as a treatment for mood disorders than other profession groups.

Table 2

Means, Standard Deviations and Number of Participants (N) in Profession Groups for 'Acceptance' Scores

Profession	Code	N=	Mean	Standard Deviation
Accounting, Banking & Finance	1	8	67.75	5.50
Administration, Call Centre & Office Support	2	34	72.32	6.18
Advertising, Marketing & Human Resources	3	6	69.17	14.78
Construction, Design & Real Estate	4	134	70.09	8.93
Education, Community Services & Training	5	16	71.50	9.58
Engineering & Information Technology	6	21	71.19	9.68
Government, Defence, Conservation & Farming	7	206	67.89	9.01
Healthcare & Medical	8	107	68.30	9.01
Hospitality, Tourism, Sports & Recreation	9	18	72.94	7.34
Manufacturing, Transport, Trades & Services	10	21	71.29	9.62
Retail & Sales	11	66	69.89	8.35
Self Employed	12	14	76.71	10.28
Unemployed	13	10	67.50	9.25

Out of interest, mental health professionals were separated from other healthcare and medical professionals (including psychiatrists, psychologists, social workers, counsellors or psychotherapists) and an independent-groups t-test was conducted to compare 'acceptance' scores in mental health professionals and non -mental health professional groups. The results produced a similar significant difference in group means to that of the healthcare and medical professionals against other professionals, with mental health professionals scoring lower on average compared with other professions ($t(659) = 3.58$, $p = 0.0004$). Due to the similarity of results, mental health professionals remained included in the 'healthcare and medical professionals' group.

Prediction 3: Individuals indicating healthy lifestyles will be more accepting toward micronutrients.

The possible range on 'healthy lifestyle' scores was 20-80, where higher scores indicated higher levels of healthy lifestyle. The obtained range was 35-75. The possible range on the 'acceptance' scores was 20-100, where higher scores indicated higher acceptance towards the use of micronutrients as a treatment for mood disorders. The obtained range was 42-98. An initial Pearson product-moment correlation coefficient of 'healthy lifestyle' scores against 'acceptance' scores revealed that the two groups had a significant small positive relationship ($r = 0.089$, $n = 661$, $p < 0.05$). After removal of 3 outliers (participants 271, 318 and 650) this correlation increased the significant small positive relationship ($r = 0.105$, $n = 658$, $p < 0.05$). This relationship is demonstrated by Figure 1. Overall there was a small positive relationship between 'healthy lifestyle' scores and 'acceptance' scores. Small increases in healthy lifestyle were associated with small increases in acceptance of micronutrients as a treatment for mood disorders.

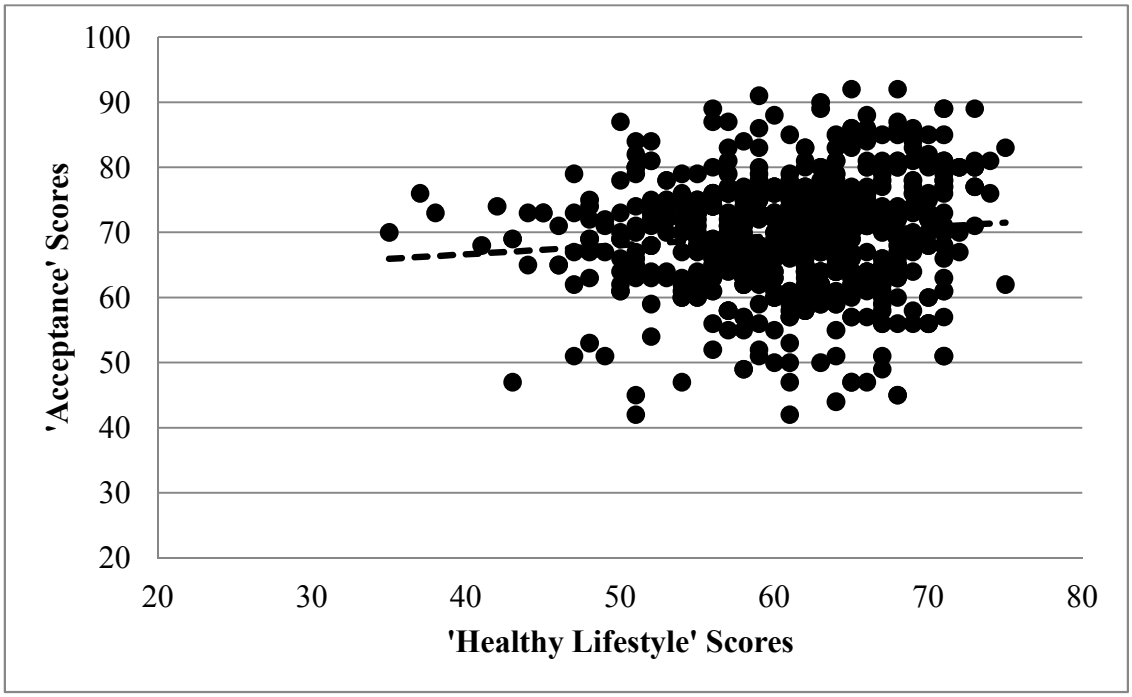

*Figure 1.*Association between 'Healthy Lifestyle' Scores and 'Acceptance' Scores

Some notable results occurred in the 'healthy lifestyle' and 'acceptance' scores. Both males and females scored highest in their 'healthy lifestyle' score in the 47-60 year old category (Tables 5 & 6, Appendices V & IV). Also, 'healthy lifestyle' scores for females were on average at least 4 points higher in all higher education groups than the 'less than final year of high school' group, scoring very closely in 'healthy lifestyle' scores in all higher educated groups. The same result was found in the male group with the 'less than final year of high school' group scoring on average 8.9 points lower in their 'healthy lifestyle' scores than all other higher educated groups (Tables 5 & 6, Appendices V & IV).

Prediction 4: Individuals with previous experience with mood disorders will be more accepting of micronutrients.

A one-way ANOVA was conducted to compare the effect of previous experience with a mood disorder in 'Yes', 'No' and 'Unsure' groups (coded as 1, 2, and 3 respectively) on

'acceptance' scores. Means and standard deviations for these groups are presented in Table 3. The possible range on the 'acceptance' scores was 20-100, where higher scores indicated higher acceptance towards the use of micronutrients as a treatment for mood disorders. The obtained range was 42-98. There were no statistically significant differences between group means ($F(2, 658) = 1.46$, $p=0.23$). As such no post-hoc tests were conducted. These results suggest that experience with mood disorder does not have an effect on acceptance towards the use of micronutrients as a treatment for mood disorders.

All participants were asked at the conclusion of the survey "If micronutrients and conventional treatments were found to be *equally* effective for treating mood disorders and you came to be diagnosed with (or re-diagnosed with) a mood disorder, which treatment would you choose first?" Participants had the choice to answer from the following: conventional treatment, micronutrient treatment, other treatment or none. A Pearson's Chi Square test was performed to determine if participants with varied experiences with mood disorder (yes experience, no experience or unsure) were distributed differently across the choice of micronutrient treatment (yes N=129, no N=194, unsure N=51) and conventional treatment (yes N=78, no N=108, unsure N=51). The test failed to indicate a significant difference across first treatment choices, $X^2(2)=1.69$, $p= 0.43$.

Table 3

Means, Standard Deviations and Number of Participants (N) in 'Experience with Mood Disorder' Groups for 'Acceptance' Scores

Experience with Mood Disorder Group	N=	Mean	Standard Deviation
Yes	251	69.53	8.65

No	326	69.42	9.01
Unsure	84	71.21	7.16

Prediction 5: Individuals with lower annual household income will be less accepting toward micronutrients as an alternative treatment.

The possible range on annual income was $0-$100,000 or more. The obtained range was $0-$100,000 or more. The possible range on 'acceptance' scores was 20-100, where higher scores indicated higher acceptance towards the use of micronutrients as a treatment for mood disorders. The obtained range was 42-98. A Pearson product-moment correlation coefficient of 'annual income' against 'acceptance' scores revealed that the two groups had an insignificant negative relationship ($r=-0.066$, $n=613$, $p<0.05$) ('Don't Know' and 'Unsure' income groups were removed from the analysis). Means and standard deviations of all income groups are displayed in Table 4. These results suggest that lower annual household income does not have an effect on acceptance towards the use of micronutrients as a treatment for mood disorders.

All participants were asked at the conclusion of the survey "If micronutrients and conventional treatments were found to be *equally* effective for treating mood disorders and you came to be diagnosed with (or re-diagnosed with) a mood disorder, which treatment would you choose first?" Participants had the choice to answer from the following: conventional treatment, micronutrient treatment, other treatment or none. Income groups were separated into 'low' (less than $5,000-$15,999), 'medium' ($16,000-$49,999) and 'high' ($50,000- more than $100,000). A Pearson's Chi Square test was performed to determine if participants with 'low', 'medium' or 'high' incomes were distributed differently across the choice of micronutrient treatment (low N=132, medium N=114, high N=105) and

conventional treatment (low N=82, medium N=45, high N=65). The test failed to indicate a significant difference across first treatment choices, $X^2(2)=4.9$, $p= 0.09$.

Table 4

Means, Standard Deviations and Number of Participants (N) in Income Groups for 'Acceptance' Scores

Income Group ($NZD)	Code	N=	Mean	Standard Deviation
Less than 5,000	1	93	69.57	7.98
5,000-11,999	2	104	70.13	8.54
12,000-15,999	3	37	72.00	10.63
16,000-24,999	4	72	69.50	8.76
25,000-34,999	5	44	71.25	8.59
35,000-49,999	6	66	70.97	9.14
50,000-74,999	7	103	69.48	8.06
75,000-99,000	8	57	67.40	7.32
100,000 or greater	9	37	68.70	12.47

Adolescents

No predictions were created involving the acceptance towards the use of micronutrients to treat mood disorders in people under the age of 18. However, as data was collected asking participants to rate on a Likert Scale from 1 (strongly disagree) to 5 (strongly agree) about their feelings towards the matter, a statistical analysis was carried out.

The possible range on the overall ‘acceptance’ scores was 20-100, where higher scores indicated higher acceptance towards the use of micronutrients as a treatment for mood disorders. The obtained range was 42-98. Although in the ‘acceptance’ scores sections of the survey there were no specifications in the statements about the person using micronutrients being over or under 18, overall ‘acceptance’ scores were based on the personal point of view of the participant taking the survey. Participants under the age of 18 were excluded from the survey, as such there were no overlapping overall ‘acceptance’ scores with acceptance ‘towards the use of micronutrient treatment in people under the age of 18’ scores. The possible range on acceptance ‘towards the use of micronutrient treatment in people under the age of 18’ score was 1-5, where a higher score indicated higher acceptance towards the use of micronutrients as a treatment for mood disorders in people under the age of 18. The obtained range was 1-5. A Pearson product-moment correlation coefficient of ‘acceptance’ scores against acceptance ‘towards people under the age of 18’ scores revealed that the two groups had a significant positive relationship ($r=0.407$, $n=661$, $p < 0.05$). After removal of 1 outlier (participant 286) this correlation increased the significant positive relationship ($r=0.411$, $n=660$, $p < 0.05$). Overall there was a positive relationship between ‘acceptance’ scores and acceptance ‘towards people under the age of 18’ scores. Increases in overall acceptance were associated with increases in acceptance of micronutrients as a treatment for mood disorders for people under the age of 18.

Discussion

Purpose of Research

The aim of the present research was to better understand the acceptance of mental health professionals and consumers of treatment (among other members of the public) towards micronutrients as a treatment for mood disorders. Without the acceptance of micronutrients as a mood disorder treatment from mental health professionals or consumers of treatments, such valuable treatments may become under-utilised. In addition, this research wished to aid individuals experiencing mood disorders to be aware of as many treatment options as are available.

Overall, it was found that most participants fell between the 'neutral' and 'agree' range of acceptance for micronutrients as an alternative treatment for mood disorders. Additionally, over half of participants said that they would choose to use micronutrients first over conventional or other treatments should they came to be diagnosed or re-diagnosed with a mood disorder.

Gender Differences

It was initially predicted that females would be more accepting toward micronutrients as alternative mood disorder treatment than men. This prediction was due to reports that females are more likely to accept alternative treatments than men (Kazdin, 1980). Additionally, in a study conducted by the American National Centre for Health Statistics' and the 'American National Centre for Complementary and Alternative Medicines', women were found to be more likely to use complementary and alternative medicines than men (Barnes, Powell-Griner, McFann & Nahin, 2004). The hypothesis was tested and found to be insignificant.

Participants were asked at the completion of the survey what their first choice of

treatment would be should they come to be diagnosed (or re-diagnosed) with a mood disorder if conventional treatments and micronutrient treatments were found to be equally effective. In the analysis of these answers there were also no differences indicated between males and females.

The results found may be due to multiple factors. There was an overwhelming ratio of females to males in this study (78% to 22% respectively), with females being considerably overrepresented compared to males. There may additionally be particular motives behind the ways that males and females use and accept alternative treatments such as micronutrients when treating a mood disorder which deserve some consideration.

There has been little work done on motives behind alternative treatment choices in males and females. A study conducted in 2005 investigated the motives behind use of CAM (specifically dietary supplements) amongst male and female cancer patients. A telephone survey found that 81.5% of female participants had used some form of CAM versus 59.9% of males. It was concluded that female usage of CAM was more common in those seeking additional dietary supplements; seeking focused mental therapies and lifestyle changes. CAM usage among males was common in those seeking help with cancer symptom related distress, and dissatisfaction with conventional treatment providers. Surprisingly, motives for CAM usage for females decreased with dissatisfaction with conventional treatment providers and cancer symptom related distress (Hendderson, Patterson, Neuhouser, Schwartz, Bowen, Standish & Marshall, 2005). The overarching conclusions of this study were that there is an important difference in the way that males and females use CAM. This may be due to physiological differences between the two and result in the higher ratio of females using such treatments. Perhaps in the present study there were no group differences in gender as it may be common for females to use CAM more frequently than men but not in the current context.

Females may use CAM in the form of dietary supplements for potentially fatal illnesses such as cancer but not in the event of mental health illnesses such as mood disorders.

McLaughlin and colleagues (2011) found that in older age populations it is men who more commonly use CAM than women. Men were found to be 1.79 times more likely to use CAM between the ages of 77 and 91. These results may imply that in younger populations, females would more commonly use CAM. The present study had a wide age range of participants (18-74) but as results were not significant, higher acceptance was not found between female or male participants regardless of age. The study additionally concluded that both men and women were using CAM to maintain good health for treatment of ongoing ailments. As there were only slight differences between men and women in the present study, perhaps males and females using alternative treatments are using them for similar reasons.

The non-significant gender differences in this study may conflict with previous research as the mentioned studies looked at the gender rates of use of CAM and the motives behind the usage. This study focussed on participant's acceptance of usage of alternative treatments (specifically micronutrients) and was not focussed around how often or the reasoning behind why participants typically use CAM. Past studies record females as having a higher usage of CAM but there appears to be little research around acceptance of their use (with the exception of the work done by Kazdin in 1980). Females may report high use of alternative treatments but not necessarily agree with their use.

The studies discussed largely make conclusions from their research with the use of the phrase 'complementary and/or alternative medicine' (CAM). Participants (male and female) in the current study may not have associated the term 'micronutrients' with the phrase CAM as seen in the past. This may have altered participants' 'acceptance' towards such treatments as it was presented to them in a different form. Upchurch and Chyu found in 2005 that women were more accepting of prayer, relaxation and exercise forms of CAM (Upchurch &

Chyu, 2005). As these forms of alternative treatment under the CAM title have been accepted in past research but were not included in the present study (as well as the phrase 'CAM' itself), females may have been less accepting of micronutrients as an alternative treatment as they were less familiar.

As discussed in the introduction, females exceed males in New Zealand for their prevalence of major depressive disorder by 8.9% (Oakley-Brown et al. 2006). Perhaps as found by previous research (Yates et al., 2005; Hendderson, 2005) females are indeed more likely to use CAM. However females are also more likely than males to experience mood disorders. This increased mood disorder rate by females was not large in the present study. As indicated in Table 13 (Appendix V), males were only 1.4% lower than females in previous experience with mood disorder. This difference, although small, may offer another suggestion as to why the current study has not matched previous research concluding that females are more likely to use alternative treatments – perhaps the females in this study were not experiencing the same need for treatment over males as in previous research.

Finally, the introduction included that the onset of mood disorders in females is common for those who have recently given birth. Prevalence of postnatal depression in New Zealand is particularly high compared to the rest of the world with only 13% of women seeking help with treatment (Thio, 2006). An alternative treatment such as micronutrients that provide a form of self-medication without the need of others may be particularly beneficial for these women. Without data given on females experience with childbirth, it is difficult to know how many females in the study have experienced postpartum depression specifically. One participant however, was hopeful about the use of micronutrients in the treatment of postpartum depression stating "…I hope to see more research on the use of micronutrients for the treatment of depression. This would provide some women who have postpartum

depression and want to continue breastfeeding with better treatment options that would not be harmful to the baby."

Healthcare and Medical Practitioners

It was predicted that individuals working in healthcare and medical professions would be less likely to accept micronutrients as an alternative treatment for mood disorders. A 2004 review concluded that the drive toward professionalism seen by medical health professionals is a factor that limits practitioner provision of CAM (Baer, 2004).

Statistical analyses of healthcare and medical professionals against other professionals resulted in a significant difference between healthcare and medical professionals in their acceptance towards the use of micronutrients compared to other professional groups. Specifically, healthcare and medical professionals scored lower 'acceptance' scores on average when compared to other professionals. Additionally, individuals that were categorised as 'self-employed' had significantly higher 'acceptance' scores compared to other professional groups. This 'self-employment' finding may have been due to the low group number and high standard deviation (displayed in Table 2), or the possibility that a variety of professional categories were represented by this single group.

Healthcare and medical practitioners may be affected in their acceptance towards micronutrients as an alternative treatment based on their patients' wishes. A study in 2006 concluded that likelihood of referral to CAM specialists from GPs was based on two overarching factors, one being the patients' attitudes towards CAM and the other being the GPs attitudes and relationships they themselves had towards CAM practitioners (Brien, Howells, Leydon & Lewith, 2006). An additional study concluding that the patient interest is highly important in the GPs use of CAM was conducted in 2003. This found that GPs were more inclined to refer patients to CAM provided that they displayed interest in such

treatments (Thomas, Coleman & Nicholl, 2003). These studies suggest that healthcare and medical practitioner acceptance is highly dependent on patient acceptance. Furthermore, the same study also found that just under half of the patients viewed three of 13 CAM treatments studied as conventional. Individuals (patients or healthcare and medical professionals) may not decide to use CAM treatments as their first option of treatment but may in fact view some CAM treatments as conventional. The current research however tested specifically for micronutrients as an alternative treatment for mood disorders and not CAM in its entirety. Perhaps in this instance healthcare and medical professionals are accepting of CAM treatments (as was found in Poynton, Dowell, Dew and Egan, 2006 with 94.7% of practitioner respondents referring patients to CAM therapies) but not micronutrients specifically.

A reoccurring theme in research based on healthcare and medical practitioner attitudes towards CAM is the need for increased education around alternative treatments. A Kentucky based study concluded that medical practitioners would be more motivated to use CAM to appropriately advise patients if they were provided with clinically relevant education (Flannery, Love, Pearce, Luan & Elder, 2006). A study conducted in 1988 concluded that 54% of Wellington GPs expressed an interest in training in CAM therapies (Hadley, 1988). Aditionally, it was found in 1998 that the best predictors of United States primary care physicians' use of CAM were attitude of physicians towards CAM and their training around usage (Berman, Singh, Hartnoll, Singh & Reilly, 1998). These conclusions were reflected in a 2001 questionnaire that 32% of GP respondents either personally or within their clinical team were involved with CAM treatments despite the fact that only 5.2% of GPs had had some form of CAM training in one or more CAM therapies (Lewith, Hyland & Gray, 2001).

Additional themes in research on healthcare practitioner use or referral of CAM treatments were patient request (distinguishable from patient interest); CAM practitioners not

being available at their practice or institution therefore having nowhere nearby to refer patients; failure from conventional treatments; patient cultural needs that are not able to be met by conventional treatments and/or positive prior experiences with CAM (Poynton et al. 2006). This reasoning may provide further explanation to results in the current research. It is possible that some of the healthcare and medical practitioners surveyed have used CAM treatments in the past and these have failed where conventional treatments have succeeded.

There is a wealth of research focussed on GPs attitudes towards CAM based in European and North American countries. In a study conducted by Japanese researchers in 1999, it was found that CAM treatments were practised by 73% of the medical practitioners surveyed. Chinese herbal medicine Kampo has become part of Japanese mainstream medicine over the last 100 years and as such 25% of practitioners considered Kampo not as a complementary medicine but a conventional treatment. This attitude of Japanese doctors to CAM may reflect the local history and beliefs around treatment (Imanishi, Watanabe, Satoh & Ozasa, 1999). The current research may have resulted in local beliefs and culture based on the sample, 93% of which was made up of New Zealand European, other European and North American participants (Tables 13 & 14, Appendices V & IV). As such, healthcare and medical professional acceptance towards micronutrients as an alternative treatment for mood disorders may not reflect non-Western culture and may vary in more diverse samples.

In a later Japanese study (Teramoto, 2000) it was found that GPs attitudes towards CAM are different between university and private hospitals. In the 1999 survey 76% of doctors in a Tokyo University hospital regarded Kampo as a complementary medicine. However, in a Tokyo private hospital in the same year 57% of doctors recognised Kampo as a conventional medicine. Acceptance towards alternative treatment may come from the practice at which the healthcare and/or medical professionals work, varying based on if the practitioner works in a private practice, hospital or otherwise. This result may occur due to

different staff values or collective training. The differences concluded in the Tokyo hospitals study may also have come from alternative training between the two groups. The two hospitals may train doctors to use CAM treatments in different ways, or vary in their clinical training. This idea may be displayed current study. Different levels of training between healthcare and medical practitioners in their acceptance towards micronutrients may have produced lower 'acceptance' scores than in other research.

A valid argument as to why healthcare and medical professionals in the current study are not as accepting as other professional groups is simply that society expects them to provide evidence based treatments, and this is what they have been trained to provide. However New Zealand Medical Council guidelines recommend that GPs are aware of CAM treatments even if they do not intend on using them, as they play an important role alongside conventional treatments in providing quality care (Medical Council of New Zealand, 2005).

The overarching theme in studies conducted based on practitioner use and attitudes toward CAM is lack of scientific evidence for these therapies. Poynton and colleagues in 2006 found that 88% of GPs surveyed did not wish to refer patients to CAM therapies based on lack of clinical evidence. These results came alongside the statistic that the total number of GPs practising CAM treatments has decreased from 30% in 1999 to 20.3% in 2006. It was also found that GPs felt CAM should be subject to more scientific testing and that it is less powerful than conventional medicine. The physicians in the study were concerned about the safety of CAM and the diagnostic ability of CAM therapists (Lewith, Hyland & Gray, 2001). Perhaps in order for healthcare and medical professionals in the current study to be more accepting toward the use of micronutrients as a treatment for mood disorders more research needs to be conducted which provide evidence of clinical effectiveness.

The comment section at the conclusion of the survey gave some insight into feelings of a healthcare and medical practitioner and the use of micronutrient treatment: "I would be

interested in any research on effectiveness or effects of micronutrients on mood disorders and would likely recommend them in my practice if I knew more." Two healthcare and medical practitioners had this to say about the use of conventional treatments: "I am a clinical psychologist, trained in providing evidence-based psychotherapies, and I believe in the effectiveness of these treatments." "It's my profession, I strongly believe in the efficacy of CBT, and I know more about it."

Healthy Lifestyles

It was predicted that individuals indicating health as important to their lives would be more accepting of micronutrients as an alternative treatment for mood disorders. A study completed in 2002 concluded that people whose lifestyles were healthier were more likely to use dietary supplements (Foote et al. 2003).

Statistical analysis resulted in calculated 'healthy lifestyle' scores having a significant small positive relationship with calculated 'acceptance' scores. This association demonstrated that participants who felt that health was an important aspect of their lives would be more likely to be more accepting of micronutrients as a treatment for mood disorders. As with any correlational design the direction of the relationship can never be assumed and correlation alone does not mean healthy lifestyle causes acceptance of micronutrients. Although the effect size was small (0.25), it is important to investigate why this result may have occurred.

Although there is limited research behind motives in consumption of vitamins, supplements or micronutrients, one important study conducted in 2003 found multiple factors associated with supplement use. The study concluded that people whose lifestyles were healthier were more likely to use dietary supplements (Foote et al. 2003).

A sample of African-American, Native Hawaiian, Latino, Japanese-American and Caucasian American adults completed a questionnaire based on supplement use.

Multivitamins were the most frequently reported supplement with 56% of females and 48% of males reporting regular use. Multivitamin use was associated with older age. This may be due to such participants having a greater number of years than other groups to become educated in nutrition and vitamin use. Additionally, older age groups may also tend to use micronutrients more than other groups as it has been a habit longer for them and thus they would be more likely to continue with this habit (Foote et al. 2003).

Foote and colleagues also found in 2003 that multivitamin use was associated with education. The current research foundsimilar results, with all 'healthy lifestyle' scores being higher on average in all education groups above the 'less than final year of high school' group. Furthermore, the lowest educated group scored lower on average for 'healthy lifestyle' scores than all other higher educated groups.

In line with the current prediction, it was found that dietary supplement use tends to increase with physical activity, fruit intake and a diet high in fibre (Foote et al. 2003). These findings would support the idea that people who have more interest in maintaining a healthy lifestyle are more likely to take multivitamins and as suggested in the present study, be more likely to accept them as an alternative treatment for mood disorders. In this same study, the researchers also found that participants who were obese, smokers, and had a high fat diet were less inclined to use dietary supplements. Interestingly, it was also found that participants who were former smokers were frequent users of supplements at the time of study (Foote et al. 2003).

The dietary supplement market is rapidly growing worldwide (Lee, 2003). This finding may impact the current research. People may become more accepting to micronutrients as an alternative treatment for mood disorders as years progress and the supplement market grows. People will become heavily confronted with these products. This suggestion aligns with an additional finding that people are becoming more aware of studies

done involving multivitamins and other dietary supplements (Foote et al. 2003). These studies reinforce the knowledge base that specific dietary nutrients lower disease, thus affecting the attitudes of the public. Perhaps the more studies that are done displaying the benefits of using such multivitamin or supplement treatments, the more people will become more accepting towards them as an alternative treatment for mental as well as physical illness.

It is important to investigate the quantity of supplements used by individuals who regard leading a healthy life as important to them. Foote and colleagues found in 2003 that supplement use was more common in healthy people who use multiple nutrients. Participants were looking to use one supplement housing many nutrients to provide for multiple dietary recommendations. This may suggest that if participants in the current study were asked about their acceptance towards particular vitamins (B or C for example) in the treatment of mood disorders, they may not have scored as highly as they may be more accepting of the use of vitamins in combination. Their findings however do not lead to the result that all "health conscious" people (the label given by the researchers to participants that lead healthy lives and use supplements) use multivitamins or other supplements. Demographic and lifestyle factors used in the 2003 study did not explain all of the differences in users and non-users. The high prevalence of dietary supplement use across people who lead healthy lifestyles however was significant.

A 2007 survey collected data regarding motives and practice in athlete supplement use for maintenance of health (Petroczi, Naughton, Mazanov, Holloway & Bingham, 2007). Adolescent athletes reported use of supplement use for perceived short-term health benefits; preventing illness; increased sports performance; maintenance of healthy diet and improving immunity. The study concluded that motivation for use and usage of particular supplements demonstrated incongruent reasoning. This may indicate that people, or in this case

adolescents, who lead healthy lifestyles and are regular users of supplements or multivitamins may not necessarily have enough education about their effects. This may have implications for the current study. Participants indicating 'healthy lifestyles' may be more accepting of micronutrients as an alternative treatment, but not necessarily understand their functioning. It was a common occurrence in the comment section at the conclusion of the survey for participants to claim that they may have been more accepting of micronutrients if they knew more about them. Petroczi and colleagues (2007) demonstrated that healthy people may employ supplements as a treatment regardless. One participant reflected:

> I'd be interested in seeing more scientific research on the effects of micronutrients on mood disorders. Much of my knowledge comes from health/fitness/diet magazines, which tend to overwhelm the reader with recommendations for dealing with problems and seem to gather their evidence for such recommendations from various reliable and unreliable sources. This is perhaps why I have less faith in micronutrients for treating psychological conditions, though I absolutely recognise the importance of good physical health to good mental health; maybe the 'misapplication' of micronutrients should be regulated.

Mood Disorder Experience

It was predicted that individuals with previous experience with mood disorders would be more accepting of micronutrients as an alternative treatment for their disorder than individuals without experience with a mood disorder. This was predicted due to possible rejection of previous treatments (Kessler et al. 2003; Manber et al. 2002).

Statistical analyses indicated insignificant differences between the experience with mood disorder group and the no experience with mood disorder group. The results suggest

that experience with mood disorder does not have an effect on acceptance towards the use of micronutrients as a treatment for mood disorders.

A study conducted in 2001 found results similar to those hypothesised. Kessler and others surveyed 2055 respondents based on treatments used for various health conditions. It was concluded that CAM therapies were used more than conventional therapies by people with depression. Although these results were not replicated by the current study, surprisingly amongst the 'experience with mood disorder' groups, the 'unsure' group on average scored higher in their acceptance towards alternative micronutrient treatments than the 'yes' or 'no' groups. People who are unsure of their experience with mood disorders may be more open to alternative treatments for them. Perhaps without professional diagnosis there will have been no corresponding conventional treatment prescribed, thus the 'unsure' group may have had no experience with conventional treatments. Additionally, without diagnoses, these individuals may have self-medicated through the use of easily accessed treatments such as multivitamins. Poynton and colleagues (2006) found that sales of St. Johns Wort increased by 2800% in the United States between 1997 and 1998 for the self-treatment of mild depression.

It was found by Kessler and colleagues (2001) that the majority of participants visiting conventional mental health providers were additionally using alternative treatments. This phenomenon was demonstrated in the current study (Question 36) where participants were asked to explain why they chose particular treatments as their first choice should they come to be diagnosed or re-diagnosed with a mood disorder. Many participants chose conventional treatments or micronutrient treatments but said they would not use one treatment without the other. The most common combination treatment choice came in the form of CBT coupled with micronutrients. This was demonstrated in the following comment:

> I would be hesitant to recommend or use micronutrients as the sole treatment for any mood disorder, because I think just giving pills to a patient is unethical when CBT is

> also a possibility. I think the mood disorder is more likely to relapse without CBT unless the patient/I took the micronutrient formula for the rest of his/her/my life, and I wouldn't want to have to take pills that long when there is an alternative (CBT). However, since they are likely to have fewer side effects than antidepressants/psychotics, I would use/recommend micronutrients as a complementary therapy to CBT without reservation, when I would only recommend antidepressants/psychotics as complementary therapy under extreme circumstances.

A survey of 1035 participants was conducted to test the hypothesis that people turn to alternative treatment as a result of being dissatisfied with conventional treatment. The results of the survey concluded that dissatisfaction with conventional medicine did not predict alternative health care use (Astin, 1998). The survey also found that people who turn to alternative treatment are more highly educated. It was uncovered that forms of CAM such as relaxation, exercise, and herbs were the most common forms for people experiencing depression. This may offer a suggestion as to why participants experiencing mood disorders in the present study were not more accepting than others of the use of micronutrients. The 1998 study concluded that people using alternative treatments are not doing so because they are dissatisfied with conventional treatments but find these treatments more in line with their values, beliefs and philosophies. Participants in the present study who have experience mood disorders may not be typical users of multivitamins based on their values or philosophies and thus may be less likely to accept them as an alternative treatment.

A Canadian study looked at the help-seeking behaviours of people experiencing mood disorders. It was found that 1.6% of 1956 individuals experiencing mood disorders used vitamins for mental health problems. These were the most highly used natural health products for mental health problems (Wang, Patten, Williams, Currie, Beck, Maxwell & El-Guebaly,

2005). These individuals may use vitamins in higher numbers but this may be for other purposes. Additionally 49% of participants in the sample used conventional treatments and the remaining used other or no forms of treatment. This sample demonstrates that conventional treatment is used more often than alternative treatments in people experiencing mood disorders. It may also suggest that people are open to the use of supplements dependent on their purpose.

As mentioned with gender differences, an additional reason as to why the current hypothesis may have been unconfirmed is that people with mood disorders may not necessarily 'accept' the use of micronutrients as a treatment for mood disorders but this may not mean that they would not use them at all. In the current study 56.6% of participants chose micronutrients as their first choice of treatment should they come to be diagnosed or re-diagnosed with a mood disorder, with 31.3% first choosing conventional treatment (the remainder choosing other or no treatment).

It was concluded in a study by Deng and Cassileth in 2006 that for patients with long-standing symptoms and diagnoses of general anxiety or major depression, pharmacological treatments are effective. However, CAM may reduce the amount of medication needed. They may also be seen as a welcome option after a lengthy experience with the disorder. Although not consistent with the results of the current prediction, this was demonstrated by one participant in the present study: "Antidepressants are something that I can see myself on forever, I hate that feeling. I would have loved to have had the option to try something different when originally diagnosed with depression."

It was concluded in 2006 that mood disorders may present themselves as a result of another health issue such as a cancer diagnosis. Such diagnoses have potential to alter the view of alternative treatments, as chemotherapy or other conventional treatments are rejected or inappropriate (Deng & Cassileth, 2006). Participants experiencing mood disorders in the

present study may not have experienced life-threatening diagnoses previously, and therefore vary in their levels of acceptance to those who have. However without data from participants displaying previous health ailments, this is impossible to deduce.

Household Annual Income

It was finally predicted that people with lower annual household income would be less accepting towards micronutrients as an alternative treatment for mood disorders. This was predicted due to lower income individuals potentially living in a situation where health products such as multivitamins are viewed as an unnecessary added expense, leading to non-use (Centers for Disease Control and Prevention, 2004; 2005). Insignificant statistical analyses suggest that lower annual household income does not have an effect on acceptance towards the use of micronutrients as a treatment for mood disorders.

In a North American study on females by Manber, Allen and Morris (2002) the cost breakdowns and efficacy of alternative treatments commonly used to treat depression were evaluated. Exercise, stress reduction methods, bright light exposure, herbal treatments (such as St. Johns Wort) and acupuncture were all evaluated as being relatively cheap or (in the case of acupuncture) covered by insurance companies and highly effective in treating various depressive disorders. This study demonstrates that alternative treatments for mood disorders in fact are relatively accessible to most income brackets. Although multivitamins/micronutrients were not assessed in the study, it may be gathered that if people know such treatments are available for treating depression, are easily accessed and relatively low in cost, this may be reason enough for low income bracket earners to be equally accepting toward them as a treatment for mood disorders as other income groups.

It has been reported that vitamins are an inexpensive way to gain vital nutrients for the human body. A study by Johnson, Bernard and Funderburg in 2002 concluded that the

low cost of multivitamins are more worthwhile and effective than individual vitamins unless a deficiency is present. Additionally Fletcher and Fairfield reported in 2002 that the cost of name-brand multivitamins may be as small as 20 dollars to 30 dollars monthly or generic vitamins around a low 10 dollars. Individual vitamins can be bought at an even lower cost which may benefit childbearing women in need of folate for example. At this low cost the authors recommend that all adults take at least one multivitamin a day to ensure maintenance of essential nutrients, however a higher dosage of nutrients than those offered by generic vitamins would be most effective.

It would appear that multivitamins benefit the human body and come at an affordable price, demonstrating positive reasoning for why lower income participants in the current study were not less accepting towards them as a treatment for mood disorders than other income groups.

Finally, a possibility for the unconfirmed hypothesis may be based on the sample. The most accepting income group was categorised as 'low' ($12,000-$15,999) as displayed in Table 5 & 6 (Appendices V and VI). This income brackets is also regarded as low by the Ministry of Social Development (Ministry of Social Development, 2010). Although there was no statistical significance found, it is notable that highest acceptance was scored by low earning participants. It is likely that this has occurred based on the large number of undergraduate students recruited for the study. The undergraduate students in this sample largely studied psychology. Perhaps the unconfirmed hypothesis has occurred because these students would be low income earners and most likely be engaged with the study of mental health on more of a day-to-day basis and perhaps more accepting to alternative treatments for mood disorders. No conclusions can be drawn from this result however as the hypothesis was not confirmed. Overall the sample was not representative of all income groups and was therefore a likely reason for the unconfirmed hypothesis.

Adolescents

Although not a listed prediction, the study asked participants a question about their feelings towards the use of micronutrients to treat a mood disorder for people under the age of 18. The results of such data were also requested by participants in the study. Increases in overall acceptance were associated with increases in acceptance of micronutrients as a treatment for mood disorders for people under the age of 18. Following this question, the survey had a comment section asking participants why they accepted micronutrients for under 18 year-olds as strongly or as weakly as they did.

It seems a natural outcome that the more accepting a person would be towards the use of micronutrients the more accepting they would be to see a person under the age of 18 use the same treatment. As discussed in the introduction, young people are at a high risk for mood disorders, being one of the most experienced mental disorders by people up to the age of 18 in New Zealand (Fergusson et al. 1997). With such high rates of mood disorders in New Zealand it is important than any treatment plan for this under 18 age group is well supervised. Petroczi and colleagues (2007) investigated motives and practice amongst adolescent athletes in their supplement use for maintenance of health. These nutritional supplements were usually provided to them by their parents or caregivers and consumed without being aware of potential health risks; this reiterates the need for supervision with the use of micronutrients when treating mood disorders in individuals under the age of 18. Similar sentiments were shared by a participant: “It is best to try something natural first under strict supervision.” This is especially important as it was found in one study (Klein, McNulty & Flatau, 1998) that 8% of adolescents had seen a health care provider without their parents’ knowledge.

A survey conducted by Wilson and Klein in 2002 questioning 361 adolescents about their experiences with CAM found that 10.6% of the sample had used vitamins as a CAM treatment in the last six months, 55.7% of whom had disclosed this information to their GP. The remaining participants may have been afraid that their caregivers may find out, with 56.1% of participants saying that their parents do not use CAM. For such reasons it is important that adolescents are given as many options as possible when looking at treatments for treating their mood disorders and that they are fully supported by their caregivers and health practitioners in the decisions that they make – be that to employ conventional treatment, alternative treatment, a combination, or no treatment.

In the comment section of the adolescent question in the survey, there were many comments in favour of the individual under 18 being able to make the decision for themselves as to what treatment they choose. One comment from someone who had treated depression in the past: "I had awful experiences being on anti-depressants as a teenager, so many side effects! Made me feel like a zombie. I think you need to make your body healthy as a part of becoming well again, especially without the terrible side effects." Another participant was in favour of whichever treatment works best for the adolescent: "I feel strongly against taking antidepressants for myself but have no opinion on what other people should take, what works for me may not work for them." Finally, one participant was in favour of micronutrients claiming that age should not be a factor of their use: "Regardless of age, we all need the vitamins and minerals we no longer get from our processed foods."

As suggested by the analyses, the more accepting people are towards micronutrients as a treatment for mood disorders, the more likely they will be to accept people under the age of 18 using them. Ideally, adults accepting of alternative or conventional treatments should express this to adolescents in their lives, helping them to feel more comfortable in discussing treatment options with caregivers and thus be supervised during treatment.

Limitations and Directions for Future Research

The largest limitation in the present study was the method of participant recruitment. Initially the entire psychology student body at the University of Canterbury was emailed with a link to the study survey. As research participation is a credit requirement for first year psychology students the majority of the sample were females in this year group. In an attempt to diminish the number of undergraduate female psychology students, participants were emailed from a pool who already had done a micronutrient study (Rucklidge, Johnstone, Harrison & Boggis, 2011). This group may have had pre-formed opinions depending on their experiences with micronutrient treatments or more knowledge than other participants. Additionally there was an uneven distribution of participants across profession categories. This may have been due to recruitment of colleagues from the New Zealand College of Clinical Psychologists and the American Psychological Association in the hopes of gaining perspectives from healthcare and medical professionals.

A major limitation in the study was the incorporation of CBT into the definition of 'conventional' treatments. Participants were confused about whether to choose conventional treatments or micronutrient treatments as their first choice should they come to be diagnosed or re-diagnosed with a mood disorder. Many participants commented that they would choose 'conventional' treatments to engage in talking therapy and/or CBT but would choose micronutrients over antidepressants. The same reasoning was also demonstrated by participants who chose 'micronutrients' as their first treatment option. In future it would be recommended to add a 'combination' answer option. This recommendation was additionally sought by participants as demonstrated in the comments section at the conclusion of the survey: "I really don't like the idea of lumping prescription medication, and CBT, counselling etc. into one category because they deal with mood disorders in completely different ways."

"I might have answered differently to some questions if conventional talking therapies and conventional medications had been separated out."

There were possible limitations with the measure. Although the prediction that people leading 'healthy lifestyles' would be more accepting was confirmed by the analyses, only the 'General Health' and 'Physical Functioning' sections of the SF-36 were used to calculate participants 'healthy lifestyle' score, possibly impacting results. Other health scales or the complete use of the SF-36 scale may have produced different 'healthy lifestyle' scores.

There were limitations with the way in which particular questions were asked. Section six (questions 26-30) asked participants about their previous experience with mood disorders. The question asked participants if they had had any experience with a mood disorder, rather than if they had been diagnosed with one. This makes it difficult to deduce whether or not people in the 'yes' group had self-diagnosed mood disorders. This may have differed their acceptance towards micronutrients as a treatment than those who had been diagnosed with a mood disorder from a mental health practitioner. Participants in the 'unsure' group may have overlapped with 'yes' or 'no' groups.

Some questions in sections eight, nine and ten were asked in a confusing or leading way. These sections were made up of Likert-scale questions based on participants' acceptance towards the use of micronutrients as an alternative treatment for mood disorders leading to their 'acceptance' score calculations. Question 33.b states: 'There are less adverse side effects when taking micronutrients to treat mood disorders than there are when using conventional medications.' This may have been confusing or leading and better expressed by 'Taking micronutrients can have aversive side effects'.

Question 34.e states: 'I feel that using micronutrients is a good idea for everyday life but not for trying to treat a mood disorder.' This double-barrelled statement may have caused

some confusion, as demonstrated by one participant: “This should be split up as I would disagree with the first section but agree with the second.”

Finally, section 11 (questions 35 and 36) asked participants to choose their first treatment from conventional or micronutrients should they come to be diagnosed or re-diagnosed with a mood disorder. As this question was based on a hypothetical situation, people who had not had any experience with mood disorders may have found it difficult to place themselves in such a situation. Additionally the question gave no indication on the severity or length of the mood disorder. This was confirmed in the comment section by a few participants: “Some questions I felt it difficult to answer because I kept thinking "well, it depends..." it depends on the severity and the length of time the individual has been dealing with their disorder.” “Since I had no mood disorders or know anyone that does. I found it hard to imagine what I would do if I developed one.”

Section 11 was followed by one similar, asking participants to what level they agree with people under the age of 18 using micronutrients as a treatment for mood disorders. As this section was structurally different to the one preceding it (asking which treatment they would choose first rather than how strongly they agreed/disagreed with the use of micronutrients) they were incomparable for statistical analyses.

Future research interest may include acceptance studies into micronutrient treatments for mood disorders in non-Western cultures to see if healthcare and medical practitioners’ acceptance increases. As demonstrated by Imanishi and colleagues in 1999, the high level of acceptance from Japanese doctors to CAM may reflect the local history and beliefs around alternative treatment, which may produce similar results for the present study.

Additional research is important focussing on acceptance of under 18 year-olds to gain their perspectives on the use of micronutrients as a treatment for mood disorders. This

study touched on adult perspectives towards the use of micronutrients in under 18 year-olds, but it is important to know the feelings of such treatments from all potential users themselves.

Finally it would be worthwhile gaining the attitudes of healthcare and medical practitioners alone into the micronutrient treatment of mood disorders.

Conclusion

A small number of interesting significant results were found in the present study. Healthcare and medical professionals were found to be less accepting of micronutrients as an alternative treatment for mood disorders than other professions and people who lead more healthy lifestyles were found to be more accepting than less healthy lifestyles. There were no significant effects of gender, experience with mood disorders or low household incomes. Results were consistent with previous literature concluding that older and more educated people are more accepting of alternative treatments (Yates et al. 2005). Results are limited due to overrepresentation of females and healthcare and medical professionals in the sample.

Lack of higher female acceptance for micronutrient treatment may be based on alternative motives to males, physiology or previous diagnoses such as cancer. Females tend to use other forms of alternative treatments such as meditation and relaxation, possibly explaining current results.

Lower acceptance towards micronutrients as an alternative treatment for mood disorders was found in healthcare and medical professionals. Patient wishes and medical practitioner training and attitudes all effect CAM referrals. Overall, non-Western medical practitioners are more likely to be accepting of alternative treatments and healthcare and medical practitioners need more training and education in the use of CAM. Lack of evidence-based knowledge is a large predictor in healthcare and medical professional acceptance of alternative treatments, as replicated in the current study.

Acceptance towards micronutrients as an alternative treatment for mood disorders increases with people who regard health with high importance. This finding is consistent with previous research that acceptance increases with physical activity, fruit intake and a high fibre diet. Consistent results were also produced with healthy older age groups having higher acceptance levels.

Experience with mood disorder was not a predictor of acceptance. People unsure of their experience with mood disorder were the most accepting group and participants largely wanted a combination of CBT and/or talking therapy and micronutrients as a treatment for mood disorders.

Lower income was not associated with lower acceptance. Studies have confirmed that most CAM treatments are relatively cheap and that vitamins are an inexpensive way to gain vital nutrients for the human body (Johnson, Bernard & Funderberg, 2002). Higher accepting participants were more likely to be accepting of the use of micronutrients in individuals 18 years or under with a mood disorder. Adults that are accepting of CAM need to portray this to under 18 year-olds and strict supervision must be given during their use.

Participants are more likely to accept alternative treatments to mood disorders such as micronutrients if they are older and if treatments are in line with their beliefs. Treatment users and treatment providers alike seek more knowledge about the effectiveness of micronutrients; and acceptance of micronutrients as an alternative treatment to mood disorders is largely granted on the basis of a combination treatment with conventional methods.

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APPENDICES

Appendix I

Could multivitamins be the key to treating mood disorders??

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

We are looking for people over the age of 16 to fill out a quick online survey to let us know what they think about using dietary vitamins, minerals and amino acids (also known as micronutrients) as a treatment for mood disorders.

As a thank you for your time *YOU COULD WIN ONE OF TWO 2GIG IPODS* personally engraved with whatever you choose!

PLEASE VISIT http://canterbury.qualtrics.com/SE/?SID=SV_9ntJcZOcPTImnHK and let us know what you think!

This study has been approved by the University of Canterbury Human Ethics Committee. For more information please contact ged33@uclive.ac.nz.

Visit http://canterbury.qualtrics.com/SE/?SID=SV_9ntJcZOcPTImnHK to complete the survey and be in to win an iPOD SHUFFLE. For more information contact ged33@uclive.ac.nz
Visit http://canterbury.qualtrics.com/SE/?SID=SV_9ntJcZOcPTImnHK to complete the survey and be in to win an iPOD SHUFFLE. For more information contact ged33@uclive.ac.nz
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Visit http://canterbury.qualtrics.com/SE/?SID=SV_9ntJcZOcPTImnHK to complete the survey and be in to win an iPOD SHUFFLE. For more information contact ged33@uclive.ac.nz

Appendix II

Statement of Voluntary Consent
To participate in the study described below

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Name of Study: Acceptance Towards the Use of Micronutrients in the Treatment of Mood Disorders

Purpose of Study: To better understand the attitudes of the general public towards using micronutrients in treating mood disorders through the analysis of survey results; and make possible recommendations to general practitioners, people experiencing mood disorders, professionals in the psychology discipline, medication manufacturers and the general public.

Primary Researcher(s): Dr. Julia Rucklidge, Grace McNatty

Contact Information: Department of Psychology
University of Canterbury
Private Bag 4800
Christchurch 8140

As a volunteer participant in the above mentioned research, I understand that I will be asked to complete a survey that will ask questions related to the use of micronutrients in mood disorders and my feelings towards this. The survey typically takes about 15 minutes to complete although this time can vary depending on each participant. I also understand that I may consider some of the questions personal in nature but that the information I provide will be used exclusively for this study and will in no way be associated with my name, computer log-in or any other identifiable information.

As a participant in this study I am aware that the questions in this survey may cause anxiety or stress depending on my personal situation but that my answers may assist people experiencing mood disorders and possibly help give them more suitable options when considering treatment in future.

By clicking "I Agree", I state that I have read this consent form in its entirety and I understand that I may exit from this survey at any time without consequence.

☐ I AGREE

☐ I DO NOT AGREE

Appendix III

ACCEPTANCE TOWARD THE USE OF MICRONUTRIENTS IN THE TREATMENT OF MOOD DISORDERS: *A SURVEY*

Section 1: Demographic

Are you:

- ☐ Male
- ☐ Female

What is your date of birth? (DD/MM/YYYY)
NOTE: Participants under the age of 16 are unfortunately ineligible to complete this survey and will therefore automatically exit upon completion of this answer.

What is your country of residence?

What is your marital status?

- ☐ Married
- ☐ Divorced
- ☐ Separated
- ☐ Single
- ☐ De Facto
- ☐ Civil Union
- ☐ Widow

Which ethnicity/ethnicity's do you most strongly identify yourself with? (Please select all that apply)

- ☐ New Zealand European
- ☐ Other European (Please Specify)
- ☐ Maori
- ☐ Samoan
- ☐ Cook Islands
- ☐ Tongan
- ☐ Niuean
- ☐ Fijian
- ☐ Vietnamese
- ☐ Chinese
- ☐ Indian
- ☐ Japanese
- ☐ Middle Eastern
- ☐ Latin American
- ☐ African
- ☐ Korean
- ☐ Don't Know
- ☐ Other (Please Specify)

Section 2:Work and Income
The following group of questions are based around your employment and income.

With regard to your most current or recent job activity:

a) In what kind of industry do/did you work? (For example: hospital, newspaper publishing, mail room, factory work, engine manufacturing.)

b) What kind of work do (did) you do? (Job Title - For example: registered nurse, personnel manager, supervisor of department, grinder operator etc.)

What is the highest qualification you have earned?

- Final year of high school
- Apprenticeship certification
- Post Graduate Diploma
- Bachelor's Degree
- Master's Degree
- Doctorate
- None of the above (less than final year of high school)
- Other (Please specify)

Which of the following best describes your main daily activities and/or responsibilities?

- Working full-time
- Working part-time
- Studying full-time
- Unemployed or laid off
- Looking for work
- Keeping house or raising children full-time
- Retired
- Other (Please specify)

Roughly how much did you earn, before taxes and other deductions, over the last 12 months?

- Less than $5,000
- $5,000 through $11,999
- $12,000 through $15,999
- $16,000 through $24,999
- $25,000 through $34,999
- $35,000 through $49,999
- $50,000 through $74,999
- $75,000 through $99,999

- ☐ $100,000 and greater
- ☐ Don't Know
- ☐ No Response

Please state the currency in which this money was earned:

Section 3: Household

The following group of questions are based around your household.

How many people are currently living in your household, including yourself?

Of these people, how many are children?

Of these people, how many are adults?

Of the adults, how many bring income into the household?

Section 4: General Health

The following group of questions are based around your health.

In general, would you say your health is:

- ☐ Excellent
- ☐ Very good
- ☐ Good
- ☐ Fair
- ☐ Poor

Compared to one year ago, how would you rate your health in general now?

- ☐ Much better than one year ago
- ☐ Somewhat better now than one year ago
- ☐ About the same as one year ago
- ☐ Somewhat worse now than one year ago
- ☐ Much worse now than one year ago

The following items are about activities you might do during a typical day.

Does your health limit you in these activities? If so, how much?

	Yes, limited a lot	Yes, limited a little	No, not limited at all
Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	☐	☐	☐
Moderate activities, such as moving a table, pushing a vacuum cleaner, bowling, or playing golf	☐	☐	☐
Lifting or carrying groceries	☐	☐	☐
Climbing several flights of stairs	☐	☐	☐
Climbing one flight of stairs	☐	☐	☐
Bending or kneeling	☐	☐	☐
Walking more than one kilometre (0.6 Miles)	☐	☐	☐
Walking several blocks	☐	☐	☐
Walking one block	☐	☐	☐
Bathing or dressing myself	☐	☐	☐

How true or false is each of the following statements for you?

	Definitely False	Mostly False	Don't Know	Mostly True	Definitely True
I seem to get sick a little easier than other people.	☐	☐	☐	☐	☐
I am as healthy as anybody I know.	☐	☐	☐	☐	☐
I expect my health to get worse.	☐	☐	☐	☐	☐
My health is excellent.	☐	☐	☐	☐	☐

Please state the extent to which you agree or disagree with the following statements:

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
There is nothing more important than good health.	☐	☐	☐	☐	☐
Good health is only of minor importance in a happy life.	☐	☐	☐	☐	☐
If you don't have your health, you don't have anything.	☐	☐	☐	☐	☐
There are many things I care about more than my health.	☐	◉	☐	☐	☐
Alternative Treatment Providers					

Section 5: Use of Alternative Treatments

The following group of questions are based around alternative treatments for health care and your possible use of these.

Which natural health products and therapies do you use or have you used in the past? (Please select all that apply)

- ☐ Acupuncture
- ☐ Acupressure
- ☐ Aromatherapy
- ☐ Art therapy
- ☐ Ayurveda (Native traditional Indian medicine)
- ☐ Bach flower remedies
- ☐ Chiropractic
- ☐ Colour Therapy
- ☐ Dance Movement Therapy
- ☐ Spiritual Healing
- ☐ Herbal Medicine
- ☐ Homeopathy
- ☐ Hypnosis
- ☐ Magnetic Therapy
- ☐ Massage
- ☐ Meditation
- ☐ Transcendental Meditation
- ☐ Music Therapy
- ☐ Naturopathy
- ☐ Osteopathy
- ☐ Reiki (Japanese Spiritual Practice)
- ☐ Reflexology
- ☐ Relaxation/Breathing Technique
- ☐ Shiatsu Massage
- ☐ Traditional Chinese Medicine
- ☐ Therapeutic Touch
- ☐ Visualisation
- ☐ Vitamins & Minerals
- ☐ Yoga
- ☐ Other (Please Specify) _____
- ☐ None of the above

Have you ever used alternative treatments for: (Please select all that apply)

- ☐ Preventing Illness
- ☐ Treating Illness
- ☐ Promoting Health
- ☐ I have NEVER used alternative treatments
- ☐ Other (Please Specify) _____

Identify the statement that best describes your health care practices:

- ☐ I use alternative treatments only.
- ☐ I use alternative treatments alongside medical treatments given to me by my doctor.

Identify the statement that best describes your intake of natural health products:

NOTE: For the purpose of this survey 'natural health products' are defined as products that contain generally low risk ingredients that are derived from nature or their synthetic equivalents.

- ☐ I do not take natural health products.
- ☐ I take natural health products on a daily basis.
- ☐ I take natural health products on a weekly basis.
- ☐ I take natural health products on a monthly basis.
- ☐ I take natural health products once a year.
- ☐ I take natural health products less than once a year.
- ☐ Other (Please specify) _____

Identify the statement that best describes your level of involvement with an alternative treatment provider:

- ☐ I do not see alternative treatment providers.
- ☐ I see alternative treatment providers on a daily basis.
- ☐ I see alternative treatment providers on a weekly basis.
- ☐ I see alternative treatment providers on a monthly basis.
- ☐ I see alternative treatment providers once a year.
- ☐ I see alternative treatment providers less than once a year.
- ☐ Other (Please specify) _____

Section 6: History with mood disorders

The questions that follow are going to revolve around mood disorders and your ideas about treating them.

A mood disorder is defined as a Depressive disorder (including atypical depression, melancholic depression, psychotic major depression, catatonic depression, postpartum depression, seasonal affective disorder, dysthymia and/or depressive disorder not otherwise specified) or Bipolar disorder (including Bipolar I, Bipolar II,

cyclothymia and/or Bipolar disorder not otherwise specified).

Have you ever experienced a mood disorder?

- ☐ Yes
- ☐ No
- ☐ Unsure

Which type of mood disorder did you experience?

- ☐ A depressive disorder (including atypical depression, melancholic depression, psychotic major depression, catatonic depression, postpartum depression, seasonal affective disorder, dysthymia and/or depressive disorder not otherwise specified)
- ☐ Bipolar Disorder (including Bipolar I, Bipolar II, cyclothymia and/or Bipolar disorder not otherwise specified)

Did you attempt to treat this mood disorder with a conventional treatment?

(A conventional treatment is defined as any treatment for a mood disorder that is a form of psychotherapy, counselling, any kind of professional talking therapy and/or any prescribed medication, eg. antidepressants or anti psychotics.)

- ☐ Yes (Please specify) _____
- ☐ No

If you did not use a conventional form of treatment, did you try any other form of treatment?

- ☐ No
- ☐ Yes (Please specify) _____
- ☐ Did not use ANY treatment

Section 7: Likelihood of Alternative Treatments for Mood Disorders

If you were to be diagnosed with a mood disorder how likely would you be to use the following treatments?

NOTE: A mood disorder is defined as a Depressive disorder (including atypical depression, melancholic depression, psychotic major depression, catatonic depression, postpartum depression, seasonal affective disorder, dysthymia and/or depressive disorder not otherwise specified) or Bipolar disorder (including Bipolar I, Bipolar II, cyclothymia and/or Bipolar disorder not otherwise specified).

	Very Unlikely	Unlikely	Undecided	Likely	Very Likely
Antidepressant medications	☐	☐	☐	☐	☐
Anti-psychotic medications	☐	☐	☐	☐	☐
Cognitive behavioural therapy	☐	☐	☐	☐	☐
Family therapy	☐	☐	☐	☐	☐
Vitamins, minerals &	☐	☐	☐	☐	☐

amino acids					
Group therapy	☐	☐	☐	☐	☐
Individual therapy	☐	☐	☐	☐	☐
Support groups	☐	☐	☐	☐	☐
Electroconvulsive therapy	☐	☐	☐	☐	☐
Acupuncture	☐	☐	☐	☐	☐
Massage therapy	☐	☐	☐	☐	☐
Yoga	☐	☐	☐	☐	☐
Light therapy	☐	☐	☐	☐	☐
Magnetic therapy	☐	☐	☐	☐	☐
Hypnosis	◉	☐	☐	☐	☐
Herbal medicine		☐	☐	☐	☐
Breathing exercises	☐	☐	☐	☐	☐

Section 8: Micronutrient Acceptance

The following group of questions are based around your attitudes to using micronutrients to treat mood disorders.

For this section, select the box that best represents how much you agree or disagree with each statement. Please answer every question.

For example, if you strongly disagreed with the statement "Camping is enjoyable", then next to this statement you would select "Strongly Disagree."

For the purpose of this question please note the following definitions:

Micronutrients are defined as dietary multivitamins, minerals and amino acids.

Alternative treatments are defined as any treatment that is not a form of psychotherapy, counselling, professional talking therapy or any prescribed antidepressant or anti-psychotic medication.

Conventional treatments are defined as any treatment for a mood disorder that is a form of psychotherapy, counselling, any kind of professional talking therapy and/or any prescribed medications (eg. antidepressants or anti-psychotics).

A mood disorder is defined as a Depressive disorder (including atypical depression, melancholic depression, psychotic major depression,catatonic depression, postpartum depression, seasonal affective disorder, dysthymia and/or depressive disorder not otherwise specified) or Bipolar disorder (including Bipolar I, Bipolar II, cyclothymia and/or Bipolar disorder not otherwise specified).

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
People who fear the discomfort of traditional treatments for mood disorders from medical doctors are more likely to use micronutrients as an alternative treatment.	☐	☐	☐		☐
Micronutrients as an alternative treatment for mood disorders are a threat to public health.	☐	☐	☐	☐	☐
Micronutrients as an alternative treatment for mood disorders should be included in clinical care.	☐	☐	☐	☐	☐
I feel that I do not know enough about micronutrients and how they work.	☐	☐	☐	☐	☐
Family and friends can influence a person's use of micronutrients as an alternative treatment to mood disorders by exposing them to it.	☐	☐	☐	☐	☐
Positive results found using micronutrients as an alternative treatment to mood disorders are most likely due to a placebo effect.	☐	☐	☐	☐	☐
Taking micronutrients as an alternative treatment for mood disorders is not harmful.	☐	☐	☐	☐	☐

Section 9: Micronutrient Acceptance Continued

For the purpose of this question please note the following definitions:

Micronutrients are defined as dietary multivitamins, minerals and amino acids.

Alternative treatments are defined as any treatment that is not a form of psychotherapy, counselling, professional talking therapy or any prescribed antidepressant or anti-psychotic medication.

Conventional treatments are defined as any treatment for a mood disorder that is a form of psychotherapy, counselling, any kind of professional talking therapy and/or any prescribed medications (eg. antidepressants or anti-psychotics).

A mood disorder is defined as a Depressive disorder (including atypical depression, melancholic depression, psychotic major depression,catatonic depression, postpartum depression, seasonal affective disorder, dysthymia and/or depressive disorder not otherwise specified) or Bipolar disorder (including Bipolar I, Bipolar II, cyclothymia and/or Bipolar disorder not otherwise specified).

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
Micronutrients contain natural formula's which are healthier than taking drugs given by a medical doctor.	☐	☐	☐	☐	☐
People who believe in the physical, mental and spiritual aspects of health are more likely to use micronutrients as an alternative form of mood disorder treatment.	☐	☐	☐	☐	☐
There are less adverse side effects when taking micronutrients to treat mood disorders than there are when using conventional medications.	☐	☐	☐	☐	☐
The more knowledge a person has about micronutrients, the more likely he/she would be to use it as an alternative treatment for mood disorders.	☐	☐	☐	☐	☐
I feel that using micronutrients alone to treat mood disorders is not ethical, i.e it infringes on the patient's rights.	☐	◉	☐	☐	☐
I would be more likely to .	☐	☐	☐	☐	☐

try micronutrients as an alternative treatment to mood disorders if it WAS popular rather than if it was NOT popular.					
If evidence showed that micronutrients were as equally effective as conventional medications, involving less side effects but involving more pill-taking than conventional medications, I would try using micronutrients to treat my mood disorder.	☐	☐	☐	☐	☐

Section 10: Micronutrient Acceptance Continued

For the purpose of this question please note the following definitions:

Micronutrients are defined as dietary multivitamins, minerals and amino acids.

Alternative treatments are defined as any treatment that is not a form of psychotherapy, counselling, professional talking therapy or any prescribed antidepressant or anti-psychotic medication.

Conventional treatments are defined as any treatment for a mood disorder that is a form of psychotherapy, counselling, any kind of professional talking therapy and/or any prescribed medications (eg. antidepressants or anti-psychotics).

A mood disorder is defined as a Depressive disorder (including atypical depression, melancholic depression, psychotic major depression,catatonic depression, postpartum depression, seasonal affective disorder, dysthymia and/or depressive disorder not otherwise specified) or Bipolar disorder (including Bipolar I, Bipolar II, cyclothymia and/or Bipolar disorder not otherwise specified).

	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I view micronutrients as a worthwhile possible treatment for mood disorders.	☐	☐	☐	☐	☐
If I were to use micronutrients to treat my own mood disorder and found positive results, or if I were to witness others use micronutrients to treat their mood disorder and find positive results, I would be happy to recommend them to others.	☐	☐	☐	☐	☐

I feel that using micronutrients is a good idea for everyday life but not for trying to treat a mood disorder.	☐	☐	☐	☐	☐
Micronutrient treatments used to treat mood disorders that have not been tested in a scientific manner should be discouraged.	☐	☐	☐	☐	☐
People would be more likely to use micronutrients to treat mood disorders if there were more stores that sold them.	☐	☐	☐	☐	☐
I would not mind taking micronutrients if I were to be diagnosed/re-diagnosed with a mood disorder and a general practitioner or other medical professional recommended that I do so.		☐	☐	☐	☐

Section 11: Micronutrients vs Conventional for adults

If micronutrients and conventional treatments were found to be equally effective for treating mood disorders and you came to be diagnosed with (or re-diagnosed with) a mood disorder, which treatment would you choose first?

NOTE: Micronutrients are defined as dietary vitamins, minerals & amino acids.

Conventional treatments are defined as any treatment for a mood disorder that is a form of psychotherapy, counselling, any kind of professional talking therapy and/or any prescribed antidepressant or anti-psychotic medication.

☐ Conventional treatments

☐ Micronutrients

☐ Other (Please specify) _____

☐ No treatment

Why would this be your first chosen treatment?

_____

Section 12: Micronutrients vs Conventional for Under 18

If micronutrients and conventional treatments were found to be equally effective for treating mood disorders and someone you knew under the age of 18 came to be diagnosed with a mood disorder, would you agree with them using micronutrients as a treatment?

NOTE: Micronutrients are defined as dietary vitamins, minerals & amino acids.

Conventional treatments are defined as any treatment for a mood disorder that is a form of psychotherapy, counselling, any kind of professional talking therapy and/or any prescribed antidepressant or anti-psychotic medication.

- I would strongly disagree
- I would disagree
- I would neither disagree nor agree
- I would agree
- I would strongly agree

Why would you react in this way?

Comments:

If you have any questions or comments about this survey, please feel free to express them here:

Survey Powered By Qualtrics

Appendix IV

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

HUMAN ETHICS COMMITTEE

Secretary, Lynda Griffioen
Email: human-ethics@canterbury.ac.nz

Ref: HEC 2011/68

22 August 2011

Grace McNatty
Department of Psychology
UNIVERSITY OF CANTERBURY

Dear Grace

The Human Ethics Committee advises that your research proposal "Attitudes towards the use of micronutrients in the treatment of mood disorders" has been considered and approved.

Please note that this approval is subject to the following:

- The advertisement needs to be on UC letterhead.
- Please ensure the email for the iPod is separate to the survey.

Best wishes for your project.

Yours sincerely

Michael Grimshaw
Chair
University of Canterbury Human Ethics Committee

Appendix V

Table 5

Male Summary of Results

Participant Information	N=	Average Healthy Lifestyle Score*	Average Acceptance Score ****	First Treatment Choice (%)				Average Acceptance of Under 18s Use***
				Micronutrient	Conventional	Other	None	
Age								
18-32	84 (59.6%)	60.9	67.6	26.2	47.6	7.1	2.4	3.4
33-46	25 (17.7%)	59.6	71.2	8.0	64.0	24.0	16.0	3.6
47-60	29 (20.6%)	61.9	69.3	17.2	72.4	10.3	0.0	3.6
61-74	3 (2.1%)	59.0	65.3	0.0	33.3	66.7	0.0	2.7
Mean		*60.4*	*68.4*	*12.9*	*54.3*	*27.0*	*4.6*	*3.3*
Country of Residence								
NZ	113 (80.1%)	60.2	68.2	31.9	54.0	12.4	1.8	3.5
Australia	7 (5.0%)	61.2	68.0	50.0	50.0	0.0	0.0	3.2
USA	19 (13.5%)	64.0	71.4	21.1	63.2	10.5	5.3	3.2
China	-	-	-	-	-	-	-	-
Belgium	1 (0.7%)	63.0	61.0	0.0	100.0	0.0	0.0	4.0

Kuwait	-	-	-	-	-	-	-	-
Russia	-	-	-	-	-	-	-	-
UAE	1 (0.7%)	68.0	72.0	0.0	0.0	100.0	0.0	4.0
Vietnam	-	-	-	-	-	-	-	-
Malaysia	-	-	-	-	-	-	-	-
India	-	-	-	-	-	-	-	-
France	-	-	-	-	-	-	-	-
Mean		*63.3*	*68.1*	*20.6*	*53.4*	*24.6*	*1.4*	*3.6*

Primary Ethnicity

NZ European	103 (73.0%)	60.6	69.2	33.0	54.4	9.7	2.9	3.5
Other European	23 (16.3%)	61.1	66.4	26.1	73.9	21.7	0.0	3.0
Maori	1 (0.7%)	50.0	64.0	100.0	0.0	0.0	0.0	3.0
Samoan	-	-	-	-	-	-	-	-
Vietnamese	-	-	-	-	-	-	-	-
Chinese	1 (0.7%)	57.0	65.0	100.0	0.0	0.0	0.0	4.0
Indian	1 (0.7%)	68.0	72.0	0.0	0.0	100.0	0.0	4.0
Middle Eastern	-	-	-	-	-	-	-	-
Latin American	-	-	-	-	-	-	-	-
African	-	-	-	-	-	-	-	-
Korean	2 (1.4%)	62.5	65.0	0.0	100.0	0.0	0.0	4.0
Don’t Know	2 (1.4%)	64.0	65.0	50.0	50.0	0.0	0.0	2.5

Other	8 (5.7%)	63.0	69.1	0.0	87.5	12.5	0.0	4.0
Mean		*60.8*	*67.0*	*38.6*	*45.7*	*18.0*	*0.4*	*3.5*
Highest Qualification								
Final Year of High School	52 (36.9%)	58.6	67.4	34.6	51.9	11.5	1.9	3.5
Apprenticeship Certification	9 (6.4%)	63.9	71.0	22.2	66.7	11.1	0.0	3.4
Post Graduate Diploma	9 (6.4%)	68.0	78.7	11.1	77.8	11.1	0.0	3.4
Bachelor's Degree	25 (17.7%)	62.6	68.4	40.0	48.0	8.0	4.0	3.6
Master's Degree	22 (15.6%)	61.7	68.4	27.3	54.5	18.2	0.0	3.3
Doctorate	14 (9.9%)	59.6	65.1	28.6	50.0	21.4	0.0	3.4
Less Than Final Year of High School	4 (2.8%)	55.0	61.0	50.0	50.0	0.00	0.0	3.25
Other	6 (4.3%)	61.2	74.0	0.0	83.3	0.0	16.7	3.3
Mean		*61.3*	*69.3*	*26.7*	*60.3*	*10.2*	*2.8*	*3.4*
Annual Income ($NZ)								
Less than 5,000	17 (12.1%)	57.5	65.6	52.9	41.2	0.0	5.9	2.9
5,000-11,999	29 (20.6%)	59.1	69.1	37.9	51.7	10.3	0.0	3.5
12,000-15,999	6 (4.3%)	59.0	64.5	33.3	50.0	16.7	0.0	3.3
16,000-	18	62.1	69.3	38.9	44.4	11.1	5.6	3.4

24,999	(12.8%)							
25,000-34,999	6 (4.3%)	59.5	69.7	16.7	66.7	16.7	0.0	3.7
35,000-49,999	11 (7.8%)	65.0	72.7	18.2	72.7	0.0	9.1	4.3
50,000-74,999	20 (14.2%)	61.0	70.2	25.0	55.0	20.0	0.0	3.6
75,000-99,999	12 (8.5%)	63.6	68.7	8.3	66.7	25.0	0.0	3.2
100,000 or more	11 (7.8%)	61.8	68.0	27.3	63.6	9.1	0.0	3.4
Don't Know	6 (4.3%)	62.5	66.0	16.7	83.3	0.0	0.0	3.2
No Response	5 (3.5%)	61.0	64.6	20.0	40.0	40.0	0.0	3.4
Mean		*61.1*	*68.0*	*26.8*	*57.8*	*13.5*	*1.9*	*3.4*

Average "Healthy Lifestyle Score" (Out of 80)

Lowest Quartile (42-60)	35 (24.8%)	-	67.8	37.4	45.7	17.1	0.0	3.3
Second Lowest Quartile (60-66)	35 (24.8%)	-	69.2	34.3	54.3	8.6	2.9	3.6
Second Highest Quartile (66-69)	35 (24.8%)	-	67.0	31.4	51.4	14.3	2.9	3.4
Highest Quartile (69-80)	36 (25.6%)	-	73.0	19.4	69.4	8.3	2.7	3.4
Mean			*69.25*	*30.6*	*55.2*	*12.1*	*2.1*	*3.4*

Use Of Alternative Treatments

Used alternative treatments for: preventing illness, treating illness, promoting health, other.	86 (61.0%)	60.6	70.2	22.1	61.6	15.1	1.2	3.5
Never used alternative treatment.	55 (39.0%)	61.1	66.1	43.6	45.5	7.3	3.6	3.3
Mean		*60.9*	*68.2*	*32.9*	*53.6*	*11.2*	*2.4*	*3.4*

For those who have used Alternative Treatments (as previous):

Use *only* Alternative Treatments	4 (4.7%)	59.0	76.5	25.00	50.0	25.0	0.0	3.3
Use Alternative Treatments Alongside Conventional Treatments	82 (95.3%)	60.7	69.8	22.0	62.2	14.6	1.2	3.5
Mean		*59.9*	*73.2*	*23.5*	*56.1*	*19.8*	*0.6*	*3.4*

Type of Previous Alternative Treatments use

Acupuncture	36 (5.7%)	59.4	70.9	11.1	61.1	25.0	2.8	3.3
Acupressure	15 (2.4%)	63.5	66.3	6.7	66.7	26.7	0.0	3.3
Aromatherapy	17 (2.7%)	60.2	70.2	23.5	58.5	17.6	0.0	3.4
Art Therapy	9 (1.4%)	61.7	73.2	22.2	44.4	33.3	0.0	3.3
Ayurveda	3 (0.5%)	61.0	76.7	0.0	33.3	66.7	0.0	4.3

Bach Flower Remedies	7 (1.1%)	57.6	69.9	14.3	71.4	14.3	0.0	3.3
Chiropractic	37 (5.9%)	60.4	70.4	5.4	73.0	21.6	0.0	3.6
Colour Therapy	3 (0.5%)	60.7	67.0	33.3	33.3	33.3	0.0	4.3
Dance Movement Therapy	1 (0.2%)	73.0	89.0	0.0	100.0	0.0	0.0	1.0
Spiritual Healing	12 (1.9%)	57.3	72.1	8.3	66.7	25.0	0.0	2.8
Herbal Medicine	37 (5.9%)	61.2	73.6	2.7	81.1	16.2	0.0	3.5
Homeopathy	16 (2.5%)	58.7	70.8	12.5	50.0	37.5	0.0	3.2
Hypnosis	12 (1.9%)	58.5	70.8	0.0	75.0	25.0	0.0	3.1
Magnetic Therapy	5 (0.8%)	51.8	71.6	20.0	40.0	40.0	0.0	2.8
Massage	78 (12.4%)	62.0	70.8	20.5	64.1	14.1	1.3	3.5
Meditation	51 (8.1%)	61.8	70.5	23.5	54.9	21.6	0.0	3.5
Transcendental Meditation	13 (2.1%)	59.0	69.7	23.1	69.2	7.7	0.0	3.4
Music Therapy	10 (1.6%)	63.5	72.6	20.0	60.0	20.0	0.0	3.3
Naturopathy	20 (3.2%)	61.6	72.5	15.0	60.0	25.0	0.0	3.5
Osteopathy	19 (3.0%)	60.6	67.0	10.5	42.1	42.1	5.3	3.2
Reiki	13 (2.1%)	58.9	67.0	7.7	46.2	46.2	0.0	2.8
Reflexology	14 (2.2%)	60.0	72.1	0.0	64.3	35.7	0.0	3.0

Relaxation/Breathing Techniques	43 (6.8%)	62.6	70.8	23.3	53.5	23.3	0.0	3.3
Shiatsu Massage	7 (1.1%)	56.3	70.0	0.0	71.4	28.6	0.0	2.9
Traditional Chinese Medicine	15 (2.4%)	60.3	72.2	6.7	73.3	13.3	6.7	3.4
Therapeutic Touch	5 (0.8%)	60.4	71.0	0.0	80.0	20.0	0.0	3.2
Visualisation	19 (3.0%)	58.5	66.4	26.3	26.3	47.4	0.0	3.3
Vitamins & Minerals	77 (12.2%)	60.9	71.2	20.8	66.2	13.0	0.0	3.5
Yoga	35 (5.6%)	62.9	69.4	28.6	45.7	22.9	2.9	3.4
Mean		*60.5*	*71.2*	*13.3*	*59.7*	*26.30*	*0.7*	*3.3*
Previous Experience With Mood Disorder								
Yes – Depression	49 (34.8%)	60.7	68.4	34.7	42.9	20.4	2.0	3.3
Yes – Bipolar	3 (2.1%)	61.0	80.3	0.0	100.0	0.0	0.0	3.3
No	67 (47.5%)	61.1	68.3	31.3	58.2	7.5	3.0	3.4
Unsure	22 (15.6%)	60.2	68.1	22.7	68.2	9.1	0.0	3.6
Mean		*60.8*	*71.3*	*22.2*	*67.3*	*9.3*	*1.3*	*3.4*
If yes to Mood Disorder was Treatment Attempted using a Conventional Treatment?								
Yes	34 (65.4%)	61.3	68.9	44.1	41.2	11.8	2.9	3.6

No	18 (34.6%)	61.8	67.3	22.2	66.7	11.1	0.0	3.5
Mean		*61.6*	*68.1*	*33.2*	*54.0*	*11.5*	*1.5*	*3.6*

If no to Conventional Treatment was any other form of Treatment used?

Yes**	5 (27.8%)	63.6	64.0	40.0	60.0	0.0	0.0	3.4
No	13 (72.2%)	61.2	68.5	15.4	69.2	15.4	0.0	3.5
Mean		*62.4*	*66.3*	*27.7*	*64.6*	*7.7*	*0.0*	*3.5*

*Out of Possible 80

**Followed by specific treatment answers

***Out of Possible 5

****Out of a Possible 100

Appendix VI

Table 6

Female Summary of Results

Participant Information	N=	Average Healthy Lifestyle Score**	Average Acceptance Score****	First Treatment Choice (%)				Average Acceptance of Under 18s Use***
				Micronutrient	Conventional	Other	None	
Age								
18-32	298 (57.3%)	60.7	69.7	36.9	52.7	7.4	2.7	3.5
33-46	111 (21.3%)	62.1	70.6	24.3	64.9	9.9	0.9	3.9
47-60	91 (17.5%)	63.0	70.1	20.9	61.5	15.4	2.2	3.9
61-74	20 (3.8%)	59.8	70.3	25.0	50.0	15.0	0.0	3.8
Mean		*61.4*	*70.2*	*26.8*	*57.3*	*11.9*	*1.5*	*3.8*
Country of Residence								
NZ	443 (85.2%)	61.1	70.6	29.8	59.1	9.3	1.8	3.7
Australia	10 (1.9%)	62.0	70.2	60.0	40.0	0.0	0.0	3.4
USA	59 (11.3%)	63.1	66.2	42.4	44.1	11.9	1.7	3.2
China	2 (0.4%)	63.0	62.5	0.0	50.0	0.0	50.0	2.5
Belgium	-	-	-	-	-	-	-	-
Kuwait	1 (0.2%)	64.0	75.0	0.0	100.0	0.0	0.0	1.0

Russia	1 (0.2%)	59.0	51.0	0.0	100.0	0.0	0.0	4.0
UAE	-	-	-	-	-	-	-	-
Vietnam	1 (0.2%)	59.0	67.0	0.0	0.0	100.0	0.0	3.0
Malaysia	1 (0.2%)	58.0	66.0	0.0	0.0	0.0	100.0	3.0
India	1 (0.2%)	62.0	64.0	100.0	0.0	0.0	0.0	4.0
France	1 (0.2%)	60.0	70.0	0.0	100.0	0.0	0.0	5.0
Mean		*61.1*	*66.3*	*23.2*	*49.3*	*12.1*	*15.4*	*3.3*
Primary Ethnicity								
NZ European	387 (74.4%)	61.1	70.6	30.0	59.4	9.3	1.3	3.7
Other European	95 (18.3%)	62.3	68.4	35.8	49.5	11.6	3.2	3.5
Maori	7 (1.3%)	58.4	67.7	14.3	71.4	0.0	14.3	3.4
Samoan	1 (0.2%)	66.0	81.0	100.0	0.0	0.0	0.0	5.0
Vietnamese	1 (0.2%)	59.0	67.0	0.0	0.0	100.0	0.0	3.0
Chinese	12 (2.3%)	60.7	68.3	41.7	33.3	8.3	16.7	3.1
Indian	2 (0.4%)	55.0	63.5	100.0	0.0	0.0	0.0	4.0
Middle Eastern	1 (0.2%)	70.0	73.0	0.0	100.0	0.0	0.0	3.0
Latin American	4 (0.8%)	65.3	67.8	25.0	75.0	0.0	0.0	3.5
African	3 (0.6%)	64.0	66.3	33.3	66.7	0.0	0.0	3.3

Korean	1 (0.2%)	67.0	71.0	0.0	100.0	0.0	0.0	4.0
Don't Know	3 (0.6%)	61.7	64.3	100.0	0.0	0.0	0.0	4.0
Other	3 (0.6%)	63.7	73.3	0.0	100.0	0.0	0.0	3.3
Mean		*62.6*	*69.4*	*36.9*	*50.4*	*9.9*	*2.7*	*3.6*
Highest Qualification								
Final Year of High School	148 (28.5%)	59.1	70.4	29.7	60.1	4.7	5.4	3.6
Apprenticeship Certification	7 (1.3%)	60.9	68.4	28.6	57.1	14.3	0.0	3.3
Post Graduate Diploma	59 (11.3%)	62.3	71.4	32.2	55.9	10.2	1.7	3.8
Bachelor's Degree	109 (21.0%)	62.0	71.0	28.4	57.8	12.8	0.9	3.6
Master's Degree	105 (20.2%)	63.0	69.6	31.4	56.2	11.4	1.0	3.8
Doctorate	74 (14.2%)	62.0	66.6	43.2	45.9	10.8	0.0	3.5
Less Than Final Year of High School	5 (1.0%)	55.4	77.8	0.0	80.0	20.0	0.0	4.4
Other	13 (2.5%)	61.8	70.3	23.1	76.9	0.0	0.0	3.3
Mean		*60.8*	*70.7*	*27.1*	*61.2*	*10.5*	*1.1*	*3.7*
Annual Income ($NZ)								
Less than 5,000	76 (14.6%)	58.9	70.5	28.9	61.8	3.9	5.3	3.5
5,000-11,999	75	60.8	70.5	38.7	54.7	6.7	0.0	3.7

	(14.4%)							
12,000-15,999	31 (6.0%)	58.9	73.5	29.0	61.3	6.5	3.2	3.7
16,000-24,999	54 (10.4%)	61.1	69.6	20.4	64.8	9.3	5.6	3.4
25,000-34,999	38 (7.3%)	62.6	71.5	26.3	65.8	5.3	2.6	3.8
35,000-49,999	55 (10.6%)	61.7	70.6	25.5	61.8	12.7	0.0	3.9
50,000-74,999	83 (16.0%)	62.8	69.3	37.3	54.2	8.4	0.0	3.8
75,000-99,999	45 (8.7%)	62.1	67.1	35.6	55.6	8.9	0.0	3.7
100,000 or more	26 (5.0%)	64.5	69.0	34.6	34.6	26.9	3.8	3.5
Don't Know	22 (4.2%)	62.9	69.0	31.8	45.5	18.2	4.5	3.6
No Response	15 (2.9%)	59.7	69.4	40.0	40.0	20.0	0.0	3.2
Mean		*61.5*	*70.0*	*31.6*	*54.6*	*11.5*	*2.3*	*3.6*
Average "Healthy Lifestyle Score" (Out of 80)								
Lowest Quartile (37-60)	130 (24.8%)	-	71.4	36.2	51.5	12.3	1.5	3.6
Second Lowest Quartile (60-65)	130 (24.8%)	-	70.8	34.6	51.5	8.6	2.9	3.6
Second Highest Quartile (65-69)	130 (24.8%)	-	72.0	27.7	59.2	10.8	2.3	3.8
Highest Quartile (69-80)	130 (25.6%)	-	72.9	27.7	65.4	4.6	2.3	3.7

Mean			*71.8*	*31.6*	*56.9*	*9.1*	*2.3*	*3.7*
Use Of Alternative Treatments								
Used alternative treatments for: preventing illness, treating illness, promoting health, other.	399 (76.7%)	61.4	70.6	30.1	59.1	10.3	0.5	3.7
Never used alternative treatment.	121 (23.3%)	61.2	68.1	36.4	49.6	6.6	7.4	3.4
Mean		*61.3*	*69.4*	*33.3*	*54.4*	*8.5*	*4.0*	*3.6*
For those who have used Alternative Treatments (as previous):								
Use *only* Alternative Treatments	19 (4.8%)	61.9	73.3	10.5	89.5	0.0	0.0	3.6
Use Alternative Treatments Alongside Conventional Treatments	380 (95.2%)	61.4	70.4	31.1	57.6	10.8	0.5	3.7
Mean		*61.7*	*71.9*	*20.8*	*73.6*	*5.4*	*0.3*	*3.7*
Type of Previous Alternative Treatment use								
Acupuncture	150 (5.0%)	61.9	71.9	26.7	60.0	12.7	0.7	3.9
Acupressure	62 (2.1%)	61.4	72.9	29.0	54.8	16.1	0.0	3.9
Aromatherapy	147 (4.9%)	62.0	72.7	24.5	65.3	9.5	0.7	3.9

Art Therapy	32 (1.1%)	58.9	69.7	9.4	71.9	18.8	0.0	3.9
Ayurveda	23 (0.8%)	62.8	74.7	4.3	73.9	21.7	0.0	4.1
Bach Flower Remedies	113 (3.8%)	61.2	73.1	19.5	65.5	14.2	0.9	4.0
Chiropractic	122 (4.1%)	60.7	71.9	30.4	67.9	9.8	0.9	3.8
Colour Therapy	12 (0.4%)	58.7	71.9	8.3	50.0	41.7	0.0	4.2
Dance Movement Therapy	25 (0.8%)	60.5	72.9	4.0	72.0	20.0	16.0	3.6
Spiritual Healing	47 (1.6%)	60.5	73.0	27.7	59.6	12.8	0.0	3.8
Herbal Medicine	165 (5.5%)	61.2	72.4	18.2	66.7	13.9	1.2	3.8
Homeopathy	136 (4.5%)	61.9	71.8	27.2	65.4	6.6	0.7	3.8
Hypnosis	36 (1.2%)	63.2	73.5	16.7	72.2	11.1	0.0	3.9
Magnetic Therapy	19 (1.6%)	59.2	73.8	15.8	68.4	15.8	0.0	3.8
Massage	314 (10.4%)	62.1	71.1	29.3	59.2	10.5	1.0	3.8
Meditation	194 (6.5%)	61.8	70.8	30.4	55.2	13.9	0.5	3.8
Transcendental Meditation	21 (0.7%)	61.4	71.9	33.3	52.4	14.3	0.0	3.9
Music Therapy	28 (0.9%)	60.6	71.9	7.1	78.6	10.7	3.6	3.5
Naturopathy	84 (2.8%)	61.4	74.5	14.3	69.0	15.5	1.2	4.2
Osteopathy	115 (3.8%)	62.2	71.6	20.9	64.3	13.9	0.9	4.0
Reiki	60 (2.0%)	61.6	72.2	21.7	61.7	16.7	0.0	4.0
Reflexology	59 (2.0%)	61.5	73.6	30.5	55.9	13.6	0.0	4.2

Relaxation/Breathing Techniques	213 (7.1%)	61.7	70.1	34.3	50.7	14.6	0.5	3.8
Shiatsu Massage	29 (1.0%)	63.3	71.3	20.7	62.1	17.2	0.0	4.0
Traditional Chinese Medicine	39 (1.3%)	62.2	72.5	12.8	64.1	23.1	0.0	3.8
Therapeutic Touch	28 (0.9%)	62.9	75.6	25.0	50.0	25.0	0.0	3.9
Visualisation	85 (2.8%)	62.8	70.6	30.6	54.1	15.3	0.0	3.6
Vitamins & Minerals	371 (12.3%)	61.1	70.7	28.0	61.5	9.4	1.1	3.7
Yoga	277 (9.2%)	62.3	70.8	31.0	58.5	9.7	0.7	3.7
Mean		*61.5*	*72.3*	*21.8*	*62.4*	*15.5*	*1.1*	*3.9*

Previous Experience With Mood Disorder

Yes – Depression	195 (37.5%)	59.7	69.7	31.3	52.3	13.8	2.6	3.6
Yes – Bipolar	4 (0.8%)	54.3	65.8	0.0	75.0	25.0	0.0	3.8
No	259 (49.8%)	63.0	69.7	33.6	59.8	4.6	1.9	3.7
Unsure	62 (11.9%)	60.2	72.3	25.8	58.1	14.5	1.6	3.5
Mean		*59.3*	*69.4*	*22.7*	*61.3*	*14.5*	*1.5*	*3.7*

If yes to Mood Disorder was Treatment Attempted using a Conventional Treatment?

Yes	156 (78.4%)	59.3	70.1	30.8	51.9	16.0	1.3	3.7
No	43 (21.6%)	60.4	68.1	30.2	55.8	7.0	7.0	3.6
Mean		*59.9*	*69.1*	*30.5*	*53.9*	*11.5*	*4.2*	*3.7*

If no to Conventional Treatment was any other form of Treatment used?								
Yes**	9 (20.9%)	63.3	73.3	33.3	66.7	0.0	0.0	3.9
No	34 (79.1%)	59.6	66.7	29.4	52.9	8.8	8.8	3.5
Mean		*61.5*	*70.0*	*31.4*	*59.8*	*4.4*	*4.4*	*3.7*

*Out of Possible 80

**Followed by specific treatment answers

***Out of Possible 5

****Out of a Possible 100